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IDENTIFIERS	Strategy Choice

ABSTRACT

The 1988 annual conference of the North East Association for Institutional Research focused on strategic choice. Selected papers included: "Fact Books: Paper-Based or Electronic?" (T. Gusler); "Electronic Factbooks" (J. Jacobsen); "A Comparative Analysis of Community College Administrators' and Adult Evening Credit Course Students' Attitudes Toward College Programs, Services and Environment in a Theoretically Formulated Marketing Context" (P. Murray); "The Use of Census Data to Identify New Student Markets" (D. Coan, R. Nigro); "Use of Demographic and Financial Projections in the Development of a Strategic Long-Range Plan" (R. Hoffman, and others); "Information for Planning" (F. Schmidtlein, T. Milton); "Assessment at Albany" (J. Volkwein, and others); "When Is It Going to Stop? A Speculation on Tuition Rates at One Private University" (J. Dunn and D. Terkla); "The Interactive Effect of Concern About Price on College Choice" (Y. Mulugetta, S. Murphy); "Trends in Student Aid: 1980 to 1988" (G. Lewis); "Symbiosis: The High School Partnership Program" (A. Sturtz); "Institutional Responses to State Mandates for Outcomes Assessment: Strategic Choice Based on Rationality, Bureaucracy and Politics" (A. Suchanic); "Gender Differences in Freshman Performance and Their Relationship to Use of the SAT in Admissions" (E. Armstrong); "Faculty Salary Equity" (J. Dutton, K. Bissonnette); "Patterns of Fund-Raising Proceeds and Costs" (J. Dunn, A. Adam); "The Use of Microcomputer in Discipline Cost Analysis" (K. Rajasekhara); "Assessment of Freshmen Writing Skills" (Z. Goldberg); "A Comparison of Two Placement Methods for Writing Courses" (K. Keenan); "Teaching Institutional Research to the Learning-Inhibited Institution" (M. Bagshaw); "Survey of Part-Time Faculty Members" (D. Hemenway, R. Garies); "Factors Which Affect Retention of Adult Learners During the First Year of Graduate-Level Study" (C. Oatis); "An Analysis of the Student Persistence and Attrition Process: An Urban College Perspective" (D. Costello, B. Pfeiffer); and "An Analysis of Factors Related to Student Learning Outcomes" (J. Morlock, and others). (KM)

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North
East
Association for
Institutional
Research

15th Annual Conference

STRATEGIC CHOICE:
Making Better Decisions Through Better Understanding of Institutions and Their Environments

PROCEEDINGS

The Omni Biltmore Hotel
Providence, Rhode Island

October 23-25, 1988

FOREWORD

The 1988 annual conference of the North East Association for Institutional Research revolved around the topic "Strategic Choice: Making Better Decisions Through Better Understanding of Institutions and Their Environment". Harvey R. Stone, U. of Delaware, gave the welcoming address on Sunday night and Richard H. Hall, SUNY Albany, addressed the group on Monday.

This year was a first in the recognition of "The Best Paper of the Conference". Ellen Armstrong Kanarek, Rutgers University, received this award for her paper entitled "Gender Differences in Freshman Performance and Their Relationship to Use of the SAT in Admissions", which can be found on page 236 of these Proceedings. Congratulations to Ellen!

Another first, the publication of IRIS Monograph, written by Linda Suskie of Millersville University, entitled "Survey Research - What Works for the Institutional Researcher".

Program Chair, Mike Middaugh, U. Delaware, planned the 1988 conference program and convened the jury which selected the Best Paper of the Conference. Larry Metzger, Secretary, compiled and mailed our newsletters and kept our membership database up-to-date.

Lee DeLucia led a tremendous team of Local Arrangements volunteers. Special events included an architectural walking tour of Providence, RI topped off by an evening at the Turk's Head Club. Entertainment included an expert Yo Yo demonstration. All attendees received NEAIR Yo Yo's and some even received private lessons after the show.

Ron Doernbach, Dickinson College, worked throughout the year as liaison to AIR and in further defining the role of President-Elect. Treasurer Peter Farago, Bentley College, was willing to continue in his financial role until a replacement could be elected.

Jennifer Presley, Publications Chair, continued to serve the organization in that role by assuring a timely issuance of the 1988 Proceedings. In fact, the 1988 Proceedings contain the largest proportion of papers presented at the meeting (35 of 40).

Many thanks to the members of the Steering Committee, conference attendees, and contributors to the Proceedings.

Paige V. Ireland
President, NEAIR 1987-88

OFFICERS AND COMMITTEES, 1987-1988

Officers:	President	Paige V. Ireland	Management Dynamics
	President-Elect	Ronald E. Doernbach	Dickinson College
	Secretary	Larry Metzger	Ithaca College
	Treasurer	Peter Farago	Bentley College
Members at Large:	To 1988	Michael F. Middaugh	University of Delaware
		Richard Rugen	Kurztown University
		Susan Shaman	U. Pennsylvania
	To 1989	Althea Beck	University of Connecticut
		Wendell Lorang	SUNY Albany
		Jennifer B. Presley	U. of Massachusetts, Boston
Immediate Past President:		John A. Dunn, Jr.	Tufts University
1988 Conference Chair:		Michael F. Middaugh	Universityof Delaware
1988 Local Arrangements Chair:		Lenore A. DeLucia	Rhode Island College
1987-1989 Publications Chair:		Jennifer B. Presley	U.of Massachusetts, Boston

OFFICERS AND COMMITTEES, 1988-1989

Officers:	President	Ronald E. Doernbach	Dickinson College
	President-Elect	Michael F. Middaugh	University of Delaware
	Secretary	Larry W. Metzger	Ithaca College
	Treasurer to 6/89	Peter T. Farago	Bentley College
	Treasurer 7/89-6/91	Linda Suskie	Millersville University (PA)
Members at Large:	To 1989	Althea J. Beck	University of Connecticut
		Wendell Lorang	SUNY at Albany
		Jennifer B. Presley	U. of Massachusetts, Boston
	To 1990	Elizabeth Johnson	Mass. Inst. of Technology
		Alan J. Sturtz	S. Central Comm. Coll. (CT)
		Lenore A. DeLucia	Rhode Island College
1989 Conference Chair:		Louis M. Spiro	SUNY at Brockport
1989 Nominating Committee:		Dawn G. Terkla	Tufts University
		Thomas E. Gusler	Clarion Univ. (PA)
		Ann Luciano	SUNY atBrockport

TABLE OF CONTENTS

(Addresses are included in the list of members provided at the end of these Proceedings.)

NEAIR 1988 annual conference program 1

General Session Address: Making Better Decisions through a Better Understanding of the Organization and its Environment. 17
Richard H. Hall, State University of New York at Albany

Fact Books: Paper-Based or Electronic? 30
Thomas E. Gusler, Clarion University

Electronic Fact Books. 37
John P. Jacobsen, St. System of Higher Ed. Pa.

A Comparative Analysis of Community College Administrator'and Adult Evening Credit Course Student' Attitudes Toward College Programs, Services and Environment in a Theoretically Formulated Marketing Context. 48
Peter J. Murray, SUNY Central Administration, Albany NY

The Use of Census Data to Identify New Student Markets. 60
Dr. Donald L. Coan and Dr. Richard Nigro, Neumann College, PA

A Model Program to Assess a College's Impact by Census Tract. 71
Arnold J. Gelfman and J. Robert Banacki, Brookdale Community College, NJ

The Role of Institutional Research in Maintaining Academic Standards During a Period of Declining Enrollments. 84
Robert M. Karp, North Country Community College, Saranac Lake,NY

Strategic Decision Making in the Context of Shared Governance. 96
Dr. Nathan Weiss and Dr. Henry Ross Kean College of New Jersey

Use of Demographic and Financial Projections in the Development of a Strategic Long-Range Plan. 119
Richard Hoffman, Michael McGuire, and Jane Anderson, Franklin and Marshall College, PA

Information for Planning: Campus Perspectives and Practices. 127
Frank A. Schmidtlein and Toby H. Milton, University of Maryland

Assessment at Albany - The Impact of College Experiences on Students and Alumni. 139
J. Frederick Volkwein, Wendell G. Lorang, and Laurie Webster-Saft, Marios H. Agrotes, SUNY-Albany

Institutional Images: Factors Affecting the Student Enrollment Decision Process. 149
David J. Costello, Suffolk University, MA

Post Baccalaureate Plans: Factors that Influence Graduate School Selection. 160
Dawn Geronimo Terkla, Tufts University, MA

When is it Going to Stop? A Speculation on Tuition Rates at One Private University. 170
John A. Dunn, Jr. and Dawn Geronimo Terkla, Tufts University, MA

The Interactive Effect of Concern about Price on College Choice. 179
Yoko Mulugetta and Susan Murphy, Cornell University, NY

Trends in Student Aid: 1980 to 1988. 193
Gwendolyn L. Lewis, The College Board

Symbiosis: The High School Partnership Program. 204
Alan J. Sturtz, South Central Community College, CT

Institutional Responses to State Mandate for Outcomes Assessment: Strategic Choice Based on Rationality, Bureaucracy and Politics. 214
Angela C. Suchanic, Trenton State College, NJ

Providing Distributed Access to Student Data Through the Use of an Intergrated Data Base System. 226
Diane P. Bills and Joellen S. Shaffer, RIT/NTID, NY

**********SELECTED AS BEST PAPER OF CONFERENCE**********
Gender Differences in Freshman Performance and Their Relationship to Use of the SAT in Admissions. 236
Ellen Armstrong Kanarek, Rutgers University, NJ

Admissions Standards and the Under-Prepared Student in an Urban Context: How Institutional Research is Helping to Frame the Debate. 247
Jennifer B. Presley and Peter Langer, University of Massachusetts at Boston

A Strategic Planning Model for Admissions. 258
Anthony Lolli, University of Rochester, NY

Faculty Salary Equity: Intergrating Policy and Practice Through Decision Support. 274
Jeffrey E. Dutton, SUNY-Buffalo, and Kathleen K. Bissonnette, West Virginia University

Patterns of Fund-Raising Proceeds and Costs: 1982-83 through 1986-87. 288
John A. Dunn, Jr. and Audrey Adam, Tufts University, MA

The Use of the Microcomputer in Discipline Cost Analysis. 304
Koosappa Rajasekhara, Dundalk Community College, MD

Alumni Research in Practice: Assessment of the College and Post-Graduate Experiences. 308
Mary Ann Coughlin, Smith College, MA

The Development and Application of an Individually Tailored Alumni Follow-up System. 320
William A. Welsh, Gerard G. Walker and James W. Wilson, National Technical Institute for the Deaf

The Impact of Special Counseling and Academic Services on Disadvantaged Students. 332
Marion Walker, Corning Community College, NY

Assessment of Freshmen Writing Skills: Faculty Concerns and the Principle of Measurement. 344
Zandra S. Goldberg Gratz, SUNY-Farmingdale

A Comparison of Two Placement Methods Placement in Developmental Writing Courses. 357
Kathleen Keenan, Massasoit Community College, MA

Teaching Institutional Research to the Learning-Inhibited Institution 368
Mark Bagshaw, Clark University, MA.

Planned Organizational Change in Higher Education Using an Enhanced Normative System Model. 380
Betty Millin and John Terry, University of Lowell, MA

Demographic Analysis of Connecticut's State Technical College System Faculty and Professional Staff: Potential Retirements and Estimated Costs. 391
Marian N. Steinberg, Director, System Research and Planning, CT State Technical Colleges

Survey of Part-time Faculty Members. Overview of Results. 402
D. A. Hemenway and Ruth S. Garies, Montgomery College, MD

Factors Which Affect Retention of Adult Learners During the First Year of Graduate-Level Study. 415
Christine A. Oatis, University of Lowell, MA

An Analysis of the Student Persistence and Attrition Process: An Urban College Perspective. 428
David J. Costello and Barbara Pfeiffer, Suffolk University, MA

An Analysis of Factors Related to Student Learning Outcomes. 438
Jean Morlock, Tom Moran, Tom Gonyea and Diana Green, SUNY-Plattsburgh

List of 1988 Conference Participants 451

NEAIR 1988 ANNUAL CONFERENCE PROGRAM

Note: *** indicates paper is included in the Proceedings

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Sunday, October 23
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11:15 - 12:30 PM	President's Brunch
12:00 Noon - 5:00 PM	Registration
12:30 - 3:30 PM	PRE-CONFERENCE WORKSHOPS

Newcomers to Institutional Research

Michael F. Middaugh, Director of Institutional Research and Planning, University of Delaware.

This workshop is designed to give new practitioners in institutional research a hands-on approach to getting started in the field. Using a carefully designed manual of instructional materials, workshop participants will walk through a series of exercises designed to address such issues as: How to ensure data integrity; developing factbooks and reports that are read and used by college presidents; defining critical issues for instructional research at your college or university; identifying sources of data; conducting survey research; using personal computers and commercial software in institutional research and strategic planning; developing forecasting models. The workshop will also address the political pitfalls in institutional research, and will discuss how the new practitioner can effectively link his/her office with the strategic planning/decision making center at their institution.

Test Development Workshop

Linda A. Suskie, Assistant to the President for Planning, Millersville University of Pennsylvania.

Topics discussed include clarifying your testing needs, the pros and cons of published and "homemade" tests, the merits of essay and multiple choice formats, identifying potential tests, interpreting test scores, and what "validity" and "reliability" mean. Actual tests that might be used in assessment programs are evaluated by participants.

Statistics Refresher for the Real World

Dr. Marian N. Steinberg, Director, System Research and Planning, Connecticut State Technical Colleges.

This workshop will review basic descriptive and correlational statistics commonly used in developing institutional research studies. Matching the proper statistic to the research design and interpreting and analyzing the

Sunday Afternoon
3:30 - 5:00 PM CONTRIBUTED SESSIONS

PRESENTATION *** **Fact Books: A Few New Twists**

Thomas E. Gusler, Clarion University; John Jacobsen, PA State System of Higher Ed; and Linda Swab, Clarion University, PA

This session will center on two types of fact books. The first type is similar to the traditional paper-based fact book but with a few unique twists. The second type is a fact book that uses SAS as the basic software and is shared by fourteen institutions via PROFS technology.

TRACK I: ENROLLMENT MANAGEMENT - MARKETING

Moderator: Dawn G. Terkla, Tufts University

*** **A Comparative Analysis of Community College Administrators' and Adult Evening Credit Course Students' Attitudes Toward College Programs, Services and Environment in a Theoretically Formulated Marketing Context**

Peter J. Murray, SUNY Central Administration, Albany NY

A Framework for marketing is described. Principle elements of marketing are used in this study to analyze and evaluate the degree of congruence between the perceptions of those in administrative role positions to those of adult evening students with respect to each attitudes of adult evening students toward programs, services and environment in community colleges.

*** **The Use of Census Data to Identify New Student Markets**

Dr. Donald L. Coan and Dr. Richard Nigro, Neumann College, PA

This paper explores the application of geo-demographic methods using census data to identify new student markets. This analytical approach can be useful in identifying geographic areas for marketing intervention, clarifying questions related to matching institutional mission to new external environments, and preparing needs surveys of prospective student populations.

*** **A Model Program to Assess a College's Impact by Census Tract**

Arnold J. Gelfman and J. Robert Banacki, Brookdale Community College, NJ

In this era of declining enrollments, it is even more important that colleges adapt new techniques to identify the changing marketplace. This program will show how Brookdale Community College used census tract matching to determine its impact throughout its county.

TRACK IV: POLICY - STRATEGIC CHOICES

Moderator: Susan Shaman, University of Pennsylvania

*** The Role of Institutional Research in Maintaining Academic Standards During a Period of Declining Enrollments

Robert M. Karp, North Country Community College, Saranac Lake,NY

This paper summarizes the efforts of an institutional research office to focus attention on academic standards during a period of declining enrollments. A summary on the extraction and presentation of longitudinal data will be discussed, as well as the effects that the exercise had on institutional mission, philosophy, standards, and delivery services.

*** Strategic Decision Making in the Context of Shared Governance

Dr. Nathan Weiss and Dr. Henry Ross, Kean College of New Jersey

The twin issues of institutional integrity and accountability, as they relate to the process of governance, are the focus of this paper. How can decision-making best be shared while retaining a clear vision of institutional mission? This paper uses both literature and practice in addressing these questions.

*** Use of Demographic and Financial Projections in the Development of a Strategic Long-Range Plan

Richard Hoffman, Michael McGuire, and Jane Anderson, Franklin and Marshall College, PA

Faced with a projected steep decline in the number of traditional applicants in the next decade, Franklin & Marshall College made a strategic decision to reduce the size of its student body while maintaining or increasing both the selectivity of the admissions criteria and the financial resources needed to enhance program quality. This paper outlines the planning information used to support this decision, and its effect to date.

*** Information for Planning: Campus Perspectives and Practices

Frank A. Schmidtlein and Toby H. Milton, University of Maryland

This paper examines campus practices and perspectives related to collecting, analyzing, and disseminating data for institutional planning. These findings were obtained through a nationwide study conducted by the National Center for Postsecondary Governance and Finance. The study revealed differences between assumptions about data use in planning and realities at campuses.

Sunday Evening

5:00 - 6:30 PM	Social Hour
6:30 - 8:30 PM	Dinner and Welcoming Address Speaker: Harvey R. Stone, Special Assistant to the President for Economic Development, University of Delaware
8:30 PM - ?	Cocktails and Conversation

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Monday, October 24

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7:00 - 9:00 AM	COMPLEMENTARY COFFEE AND DANISH
8:00 - 9:00 AM	SPECIAL INTEREST GROUPS:

SUNY AIRPO
    Convener: Jeffrey Dutton, SUNY at Buffalo

TUFTS/EDUCOM
    Convener: John A. Dunn, Jr. VP Planning, Tufts University

8:00 - 12:00	REGISTRATION CONTINUED
9:00 - 12:00	GENERAL SESSION

Dr. Richard H. Hall, Professor of Sociology, State University of New York at Albany

*** "Making Better Decisions through a Better Understanding of the Organization and its Enviroment."

12:00 - 1:30 PM	LUNCH, including Annual Business Meeting

Monday Afternoon
1:30 - 3:00 PM

CONTRIBUTED SESSIONS

PANEL:

*** **Assessment at Albany - The Impact of College Experiences on Students and Alumni**

J. Frederick Volkwein, Wendell G. Lorang, and Laurie Webster-Saft, Marious H. Agrotes, SUNY-Albany

This presentation illustrates the ways Albany is using its Assessment Data Bases. The results of several outcomes studies will be presented as examples: attrition/retention/achievement analyses for several student sub-populations; freshman to senior year change in student values, attitudes, and intellectual growth; and alumni satisfaction, success, and gift giving patterns differentiated by major field of study.

TRACK I: ENROLLMENT MANAGEMENT - ADMISSIONS

Moderator: Linda Suskie, Millersville University

Student Characteristics and Admissions Rates at 70 Private, Four-Year Institutions

Jennifer Mauldin, Tufts University, MA

This study explores the relationship between student and institutional characteristics and retention rates at 70 private, residential four-year institutions. Variables examined include student demographics, background characteristics, and attitudes plus institutional factors of size, financial aid policies, co-educational status and total resources. Data sources for the study are Cooperative Institutional Research Program (CIRP) survey responses and institutional profile data from the Tufts-EDUCOM Data Sharing Project. The Project consists of approximately 105 colleges and universities that share financial, enrollment and other types of management data.

*** **Institutional Images: Factors Affecting the Student Enrollment Decision Process**

David J. Costello, Suffolk University, MA

The image that an institution sends to the academic marketplace may impact the student enrollment decision process. A clear, well marketed image may increase a university's enrollment numbers. Conversely, a mixed or a muddled image may lead to enrollment declines. This paper uses survey data to measure the effect of "institutional images" on the student enrollment decision process.

TRACK I: ENROLLMENT MANAGEMENT - ADMISSIONS, CONT'D

*** **Post Baccalaureate Plans: Factors that Influence Graduate School Selection**

Dawn Geronimo Terkla, Tufts University, MA

This paper will examine three specific aspects of graduate school selection: (1) the major factors in the applicants' selection of a graduate school; (2) the influences of specific sources of information on the graduate school selection process; and (3) the major attributes that differentiate between matriculants and non-matriculants.

TRACK II: ADMINISTRATIVE - TUITION CONSIDERATIONS

Moderator: Elizabeth Taylor, Schenectady County Community College

*** **When is it Going to Stop? A Speculation on Tuition Rates at One Private University**

John A. Dunn, Jr., Tufts University, MA

Reviewing thirty years of national and institutional data, the author looks for reasons for the sharp tuition rise from 1980 on, and wonders whether self-imposed enrollment restrictions might not be largely responsible.

*** **The Interactive Effect of Concern about Price on College Choice**

Yuko Mulugetta and Susan H. Murphy, Cornell University, NY

The study investigated how the concern about education price interacts with other variables in the student's enrollment decision-making process. Multiple discriminant analysis revealed that academic ability was a significant determinant regardless of the level of price concern, while a cost-related factor (distance from home) had a significant impact only in the group with high level of concern.

*** **Trends in Student Aid: 1980 to 1988**

Gwendolyn L. Lewis, The College Board

This report provides the most recent and complete statistics available on student aid in the 1980s, complementing the publication by Gillespie and Carlson, Trends in Student Aid: 1963 to 1983 (New York: The College Board, 1983). It revises figures presented earlier for the 1980s and, for the first time, gives estimates for academic year 1987-88, replacing three previously published updates (Trends in Student Aid: 1980 to 1986 and Trends in Student Aid: 1980 to 1987).

1:30 - 3:00
Monday Afternoon, continued CONTRIBUTED SESSIONS

TRACK IV: POLICY - POTPOURRI

Moderator: Larry Metzger, Ithaca College

*** **Symbiosis: Community College - High School Partnership**

Dr. Alan J. Sturtz, South Central Community College, CT

The purpose of this study is analysis of the effectiveness of the SCCC High School Partnership Program with regard to enrollment from service area high schools, enrollment of seniors and juniors from the different schools (including sex/ethnic data), diversity of courses selected and grades awarded, and enrollment/student flow trends among program participants.

*** **Institutional Responses to State Mandate for Outcomes Assessment: Strategic Choice Based on Rationality, Bureaucracy and Politics**

Angela C. Suchanic, Trenton State College, NJ

Institutional researchers are increasingly expected to respond to mandates for outcomes assessment. This paper proposes that, in responding, institutions make strategic choices based on rational decision-making and bureaucratic and political forces. By understanding these forces, institutional researchers can fulfill their responsibilities more effectively and potentially help shape the institution's response.

*** **Providing Distributed Access to Student Data Through the Use of an Integrated Data Base System**

Dianne P. Bills and Joellen S. Shaffer, RIT/NTID, NY

The purpose of this presentation is to describe the use of INGRES, an Integrated Data Base Product, to provide academic department members the ability to access institutional registration information while having the flexibility to use the system to store department specific information. Such an on-line system permits the people who interact with a student to share information in a real time environment. In addition, the system can be used to 'flag' students who are having problems in the college environment and perhaps to avert later attrition.

3:00 - 4:30
Monday Afternoon CONTRIBUTED SESSIONS

TRACK I: ENROLLMENT MANAGEMENT - ADMISSIONS

Moderator: Dale Trusheim, University of Delaware

*** **Gender Differences in Freshman Performance and Their Relationship to Use of the SAT in Admissions**

Ellen Armstrong Kanarek, Rutgers University, NJ

Despite a 60-point deficit in total SAT, freshman women at a large public university perform significantly better than men in both total CUM and GPA in humanities and social science courses. Because GPA differences are greatest for high SATs, underprediction for women is of most concern for scholarship selection.

*** **Admissions Standards and the Under-Prepared Student in an Urban Context: How Institutional Research is Helping to Frame the Debate**

Jennifer B. Presley and Peter Langer, University of Massachusetts at Boston

This presentation will describe how institutional research at UMass/Boston is informing the institutional debate with regard to the underprepared student and admissions standards. Results will be presented from a study of the relationship between admission characteristics, placement on basic skills tests, and subsequent performance at UMass/Boston, as well as a description of the policy context before and after the study.

*** **A Strategic Planning Model for Admissions**

Anthony Lolli, University of Rochester, NY

This session will introduce a strategic planning model which helps identify new admissions recruitment opportunities. For researchers not familiar with admissions operations, the model also promotes an understanding of the existing recruitment portfolio. The model meets these objectives by uncovering opportunities resulting from the intersection of five dimensions: resources, market types, student segments, information recipients and recruitment chronology.

TRACK II: ADMINISTRATIVE - COST STUDIES

Moderator: Wendell Lorang, SUNY at Albany

*** **Faculty Salary Equity: Integrating Policy and Practice Through Decision Support**

Jeffrey E. Dutton, SUNY-Buffalo, and Kathleen K. Bissonnette, West Virginia University

The social ideal of salary equity challenges higher education to institute procedures to ensure equity rather than to defend against inequities. The regression analyses and accompanying reports described in this paper were designed specifically for decision support, i.e., to monitor salary equity, support for salary decisions, and integrate policy and practice.

*** **Fund-Raising Proceeds and Costs: Trends and Patterns, 1978-1987**

John A. Dunn, Jr. and Audrey Adam, Tufts University, MA

The paper summarizes the findings of a set of recent studies on fund-raising costs, staffing, and proceeds for 15 universities and 30 colleges. It describes trends in total and in alumni support, and gives new data on the relative importance of large gifts, the cost per dollar raised, and the patterns of staffing.

*** **The Use of Microcomputer in Discipline Cost Analysis**

Koosappa Rajasekhara, Dundalk Community College, MD

The Discipline Cost Analysis is one of the valuable tools of college administrators for making decisions of both short and long-term significance. The cost per course, cost per student credit hour, and the cost per full-time equivalent student by discipline can be analyzed using LOTUS 1-2-3 with a personal computer. The microcomputer approach provides flexibility in preparing the cost data and serves as a tool for "what if" scenarios looking at past trends and future discipline and cost projections. A step-by-step approach of determining the unit cost is discussed.

TRACK II: ADMINISTRATIVE - ALUMNI

Moderator: Richard Rugen, Kutztown University

*** **Alumni Research in Practice: Assessment of the College and Post-Graduate Experiences**

Crane Willemse and Mary Ann Coughlin, Smith College, MA

This paper presents the research of Smith College's Alumnae Biography office, which maintains and reports on several data bases of over 27,728 student and alumnae respondents. Biographical and statistical information provides data for the study of employment and graduate study patterns, and the assessment of academic and social experiences of women's undergraduate education.

*** **The Development and Application of an Individually Tailored Alumni Follow-up System**

William A. Welsh and Gerard G. Walter, National Technical Institute for the Deaf

The process through which an institutional research office constructs a questionnaire tailored to individual alumni respondents is described. The utility of the individual alumni data for admissions recruiting, development activity, program planning, and other institutional activities is described.

Using Perceptions of Educational Outcomes to Predict Alumni Involvement

Dr. Robert C. Froh and Dr. David B. White, Syracuse University, NY

This session will present the results of an alumni outcomes survey project that enabled alumni programs, development and academic administrators to determine alumni perceptions of the quality of academic and alumni programs, and to relate these perceptions to indicators of alumni involvement such as annual giving and participation in alumni reunions.

TRACK III: STUDENT RESEARCH - WRITING/COUNSELING

Moderator: Webster Trammell, Brookdale Community College

*** The Impact of Special Counseling and Academic Services on Disadvantaged Students

Marion Walker, Corning Community College, NY

Research on a grant project to provide special counseling and academic services to disadvantaged students at Corning Community College showed Special Services Students performed significantly better than the control group on GPA, retention, graduation, math and English. The rates were also higher than the overall college group on retention and graduation.

*** Assessment of Freshmen Writing Skills: Faculty Concerns and the Principles of Measurement

Zandra S. Goldberg Gratz, SUNY-Farmingdale

The efficiency and accuracy of several writing placement measures is described. In particular, the essay, high in face validity and faculty support, is compared to a multiple choice tool which sports superior reliability and predictive validity. A two stage placement program capitalized on the strengths of each device.

*** A Comparison of Two Methods for Placement in Developmental Writing Courses

Kathleen Keenan, Massasoit Community College, MA

A study conducted by Institutional Research, with faculty participation, compares standardized tests with holistically scored essays as placement instruments for introductory writing classes. In addition, the project demonstrates the value of collaboration with faculty in research to achieve credibility for results and to inform academic policy change.

4:30 - 5:00 DEMONSTRATION

A PC Factbook

Denise A. Krallman, State University of New York at Buffalo

The purpose of this PC demonstration is to share a method of automating a factbook for use by institutional researchers. Using a menu-driven LOTUS spreadsheet, the factbook system has been developed to allow users to move away from hard copy printouts, tables, and informal verbal requests, to a more systematic, work-command approach to the PC as ultimate data source.

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Tuesday, October 25
****

7:00 - 9:00 AM COMPLEMENTARY COFFEE AND DANISH

8:00 - 9:00 Steering Committee Breakfast

9:00 - 12:00 CONFERENCE WORKSHOPS

Newcomers to Institutional Research

Michael F. Middaugh, Director of Institutional Research and Planning, University of Delaware.
(Repeated from Sunday Afternoon)

Test Development Workshop

Linda A. Suskie, Assistant to the President for Planning, Millersville University of Pennsylvania.
(Repeated from Sunday Afternoon)

Ethical Issues Workshop

Robert F. Grose, Amherst College; William Lauroesch, University of Massachusetts-Amherst; Sandra J. Price, Smith College; Michael E. Schiltz, Loyola University of Chicago; Jay A. Halfond, Northeastern University

The workshop sponsors seek to draw from the experience of conference attendees insights into the nuances of difficult and sensitive ethical problems in the practice of institutional research issues. Extensive discussions will follow brief presentations. Several short case studies will be available at the opening of the conference, and attendees are encouraged to obtain and read them. Willingness to participate is the sole qualification for attendance.

9:00 - 10:15
Tuesday AM CONTRIBUTED SESSIONS

TRACK IV: ORGANIZATIONAL THEORY

Moderator: Jennifer Presley, University of Massachusetts, Boston

*** **Teaching Institutional Research to the Reluctant Institution**
Mark Bagshaw, Clark University, NY

Assisting institutional leaders to learn to value and use institutional research is as important to the successful researcher as technical and interpretational competence. This paper looks at the organizational learning process, sources of resistance in colleges and universities, and some remediation strategies.

*** **Examination and Analysis of Planned Organizational Change in Higher Education Using an Enhanced Normative Systems Model**

Betty Millin and John Terry, University of Lowell, MA

Examination and analysis of the application of an enhanced normative systems model of planned change in a higher education setting suggests a practical participative model for planned change which is highly applicable for institutions of higher education.

TRACK II: ADMINISTRATIVE - FACULTY

Moderator: Ron Doernbach, Dickinson College

*** **Demographic Analysis of Connecticut's State Technical College System Faculty and Professional Staff: Potential Retirements and Estimated Costs**

Dr. Marian N. Steinberg, Director, System Research and Planning, CT State Technical Colleges.

This research was carried out to determine the extent and potential cost of retirements. Distribution by unit for age, years of service, sick and vacation accruals are described. Potential retirements are projected based upon the provisions of each of three retirement plans, including costs and effect by unit and department.

*** **Survey of Part-time Faculty Members. Overview of Results**

D. A. Hemenway and Ruth S. Garies, Montgomery College, MD

Both administrators and full-time faculty need to know more about the part-time faculty recruited each semester. Too frequently they regard their needs as conflicting and cooperation as impossible. This paper reports the success of one community college in overcoming this barrier and presents the results of its survey of part-time faculty.

TRACK I: ENROLLMENT MANAGEMENT - RETENTION

Moderator: Felice Billups, Rhode Island School of Design

Implicit Factors in Rates and Proportion: A Look at Undergraduate Non-Success

Joseph C. Lanni, Montgomery College, MD

University X's undergraduate applicants for graduation failed to graduate in the designated semester in approximately one-third of the cases. It was determined that a number of implicit factors were combined in an aggregated error formation. Recommendations for screening applications for graduation and interpreting educational rates and proportions were submitted.

*** Factors Which Affect Retention of Adult Learners During the First Year of Graduate-Level Study

Christine A. Oatis, University of Lowell, MA

This study investigated perceptions and persistence patterns of adults who enrolled in graduate courses for the first time at a mid-size, public university. Statistical analyses of questionnaire responses revealed differences according to age cohort as well as race and full-time/part-time status among those who persisted into the second semester and those who did not persist.

*** An Analysis of the Student Persistence and Attrition Process: An Urban College Perspective

David J. Costello and Barbara Pfeiffer, Suffolk University, MA

As many colleges and universities face declining applicant pools they are turning toward the issue of retention as the means to stabilize enrollment numbers. This paper uses a log-linear approach to understanding the persistence and attrition issue. The singular and combined effects of three independent variables (race, program of study and academic achievement) are measured as to their effect on student persistence.

TRACK III: STUDENTS - GENERAL STUDENT ISSUES

Moderator: Crane Willemse, Smith College

The Role of Student Perception of Quality of Care and Privacy as Factors Affecting Student Utilization of Infirmary and Local Hospital Services

Scott Meyer, Plymouth State College, NH

This study was designed to examine which factors may underlie a student's decision to use the college infirmary or local hospitals for health care needs. It is postulated that the issues of quality of care and individual privacy are central to utilization rates. This paper presents data in support of that hypothesis.

A Comparison of Attitudes of White College Students toward Black College Students in 1982 and 1987

Robert J. Bisantz and Richard J. McCowan, SUNY-Buffalo

The presentation compares the results of two surveys that examined attitudes of white college students toward black students in 1982 and 1987. A brief review of the literature and a description of the procedures followed in developing the Bogardus social distance scale used in the study is included.

*** An Analysis of Factors Related to Student Learning Outcomes

Jean Morlock, Tom Moran, Tom Gonyea and Diana Green, SUNY-Plattsburgh

Research suggests that variables related to faculty/student relationships, student peer interactions, and the quality of student effort are likely to have significant impact upon student learning. This study empirically identifies factors related to these broad constructs. The study also analyzes the relative importance of these factors in influencing student learning.

GENERAL SESSION ADDRESS

MAKING BETTER DECISIONS THROUGH A BETTER UNDERSTANDING OF THE ORGANIZATION AND ITS ENVIROMENT

Richard H. Hall
State University of New York at Albany

In 1981, I wrote (Hall, 1981) that organizational theory does not provide guidance for practitioners in higher education. Today, I am here to contradict myself---I believe that some descriptive work and some perspectives from organizational theory actually has a lot to say to practitioners. You, of course, will be the ultimate judge of this.

I have arranged my remarks today to be like a symphony. The first movement will deal with the basic issue of decision making. The second will consider the dimensions of the enviroment. The third will deal with theoretical perspectives on the organizational-enviromental interface. The final movement will bring these themes together. Do not expect a large and triumphant finale; rather, the finale will be one in which questions remain unanswered and themes unresolved. Hopefully these questions and themes will develop a coda of enduring interest.

DECISION MAKING

My understanding of IR is that it is based firmly and squarely in what is known as the rational model of decision making. This model relies on the input of good data, making a rational decision on the basis of the information inputs, implementing the policy or plan, and then assessing the outcomes.

Contemporary organizational research and theory has cast some major doubts on the utility of this model. In this section I am going to borrow liberally from recent works of David Hickson (1985; 1986; 1987). Hickson's work on strategic decision making is both original and insightful.

There are three dominant theories or ways of thinking about decision making. The first traces its roots back to March and Simon (1958) and their notion of "bounded rationality" and has found expression in the work of Lindblom (1959). This is the incrementalism approach to decision making. This approach emphasizes that decision makers have limited information handling capabilities and that they have to pick their way through internal politcal processes. This approach de-emphasizes the rational and emphasizes that decisions are made on a "bit-by-bit" basis.

The second dominant approach is the garbage can model. As Hickson notes (1987: 184) "Its evocative terminology conjures up the tangled innards of a garbage can as an alternative to the vision of rational orderliness (Cohen et al 1972; March and Olsen 1976). Inside the can, there are quite a few oddities, or so they appear. Individuals fight for the right to participate and then do not exercise it; information that is available is ignored, more is requested, and then that too is ignored; there is acrimonious contention over the adoption of policies, but relative indifference to whether policies are implemented; and so on. To account for what goes on, the model turns the conventional view back to front. Instead of assuming that one thing causally leads to another in the logical 'conventional order,' which is not the way things seem to happen, it postulates "temporal order as being the more opposite."

Solutions, problems and participants are all in the garbage can--it is temporal simultaneity that accounts for decisions that are made. Solutions come before problems. Participants wait for an opportunity to apply their favorite solutions when a problem happens by. I would imagine that many of you know some vice presidents who seem to be the embodiment of the garbage can model. Despite the cutesy terminology, this approach is advanced seriously by serious scholars.

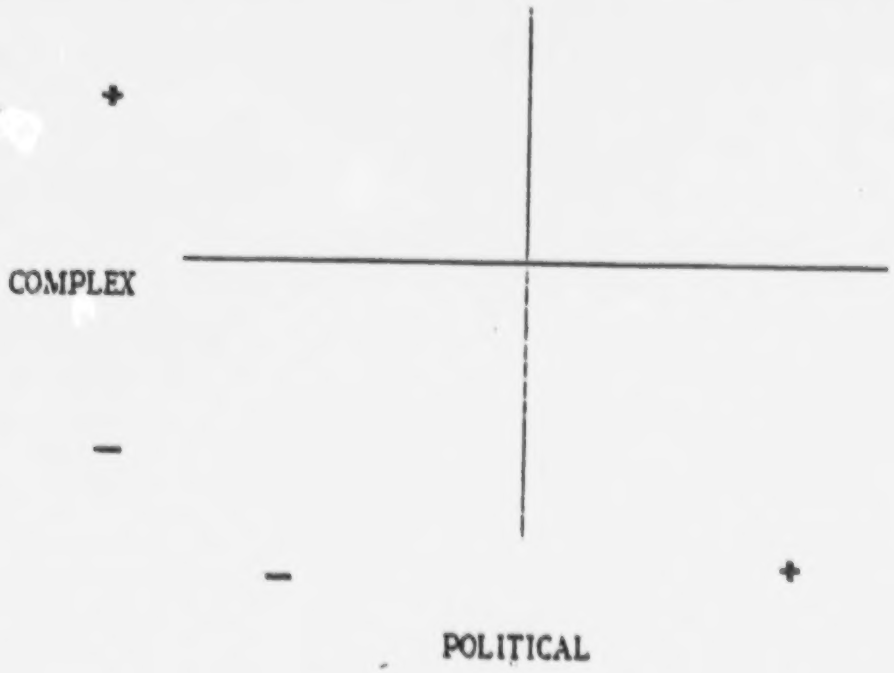
In its stress on politics and chaos, the garbage can model is the exact opposite of the mission of institutional research. At the same time, there is a message, or at least a warning here that must be heeded. Most interestingly, for our deliberations here, the Garbage Can model was developed and refined in the course of studying higher educational institutions in a series of studies at Stanford.

Hickson offers a third approach to decision making, which he labels "dual rationality." The dual aspect is that that decision making involves both problems and politics. It is critical to note that Hickson does not suggest that decision making is by rational deduction, with succesive limited comparisions, and with agreements reached by mutual partisan adjustment, which is the excessively rational approach suggested by some decision theorists. Rather, the dual rationality approach recognizes that decisions vary in their complexity and politicality. Very complex and political (weighty and controversial) issues are vortex issues. Less complex and least controversial issues are called tractable matters, while least complex, but more political issues are labeled as familiar matters.

Hickson then goes on that the problem aspects of these matters are handled by organizational elites (decision makers) in ways which attempt to approximate classic problem-solving rationality; this rationality is impacted, of course, by the sorts of issues raised by the incrementalist and garbage can theorists. In a similar way, the political aspect of decision making is handled by a implicit "interest-accommodating rationality that weighs up what is at stake for each for each interested party and what the range of acceptable alternatives may be" (p. 186). Hickson's conclusions, by the way, are based on a series of empirical studies of strategic decision making.

Figure 1

DUAL RATIONALITY DECISIONS



Hickson's work is a major contribution here. The incrementalists and garbage can theoritsts have provided a tremendously important corrective to overly rational decision models. At the same time, their success deflected attention from the fact that decision makers do pay attention to their enviroments and even to organizational goals, The dual rationality approach is an approach which brings us back to where I believe decision making research and theory should be--grounded in the experiences of people who participate in decision making on behalf of their organizations.

A critical component of decision making is the environment in which organizations--colleges and universities--operate. I will now turn to a consideration of the enviroment. This consideration will be largely descriptive.

THE ENVIROMENT

Figure 2 contains the context and analytical dimensions of the environment that will be considered here. I have developed these dimensions (Hall 1987) for general organizational analysis, but they fit here in considering higher education.

FIGURE 2

ENVIROMENTAL DIMENSIONS

	ANALYTICAL CATEGORIES		
CONTENT CONDITIONS	MUNIFICENCE	COMPLEXITY	DYNAMISM
TECHNOLOGICAL			
LEGAL			
POLITICAL			
ECONOMIC			
DEMOGRAPHIC			
ECOLOGICAL			
CULTURAL			

The technological dimension is critical for all organizations. Technology involves the ways in which raw materials are transformed. For the sake of simplicity, we will consider students and knowledge as the major raw materials. Technology takes many forms. We can see the impact of the technological enviroment in terms of the spread of mainframe and micro-computers. At the present time, the technological innovation of "writing across the curriculum" appears to be sweeping the country. This conference itself has a program full of technological tools and tricks for people in institutional research.

Publications like The Chronicle of Higher Education are the bearers of potential technological change. There are technological leaders and followers. Quite obviously, technological change is adopted through the decision making process (as are decisions not to adopt some change). Organizations of every kind contain their own radicals and reactionaries in terms of approaching technological change.

Legal conditions involve the myriad of laws and regulations affecting colleges and universities. These can range from the legal drinking age (in New York, the change from 21 as the legal age for drinking played havoc on many campuses) through reporting requirements for the federal grants and contracts, of course. Formal and informal lobbying are the accepted way of life.

Political conditions are more subtle. When I taught at the Unversity of Minnesota there was a general belief that the university fared better when Republicans were in office in the state. While there is no empirical evidence here, the belief reflects the importance of political conditions for colleges and universities. Political shifts to the left or right have had dramatic influences on campuses, as during the Viet Nam era or now with a apparent shift to the right, with fraternaties and sororities coming back strongly.

Economic conditions are obviously important for all organizations--a point that is strangely neglected by most sociologists. There is no point in belaboring the issue here.

Demographic conditions are squarely at the center of decision making in higher education. The number of 16-year-olds is well known for planning purposes, as is the distribution of people by race, gender, and ethnicity. My own best guess is that the race and ethnic factor will be the key demographic condition in the years to come. Demographic conditions are linked to political considerations, of course, so that these enviromental dimensions, while analytically distinct, in fact interwine a great deal.

Ecological conditions are important, but frequently overlooked. Changes in the physical ecology of colleges and universities are slow and rare, but the combination of acid rain and the greenhouse effect does raise frightening spectres for parts of the Northeast. The social ecology is probably of more direct importance. This involves the networks of organizations in which an organization finds itself. Rural colleges face different ecological patterns than do their urban counterparts. Similarly, a system such as SUNY is different from a completely independent college or university.

Cultural conditions are the most subtle dimension. These are clearly important if a college or university begins an overseas program (as in our Ph.D. program in China), but there are also domestic cultural factors that are important. These can range from tastes in majors to emphases on fraternities and sororities to beliefs in bi-or mono-lingualism.

The analytical dimensions are somewhat more complicated. These are drawn from the works of Aldrich (1979) and Dess and Beard (1984). Munificence refers to the richness or leaness of the various content dimensions. Thus, organizations can be faced with many technological options or very few. Demographic conditions can contain a wealth of potential students or a very limited pool, and so on.

Complexity refers to both enviromental homogeneity versus hetergeneity and the extent to which environmental factors are concentrated or dispersed. A research university with Ph.D. programs faces a widely dispersed and very heterogeneous enviroment on almost all of the content dimensions. A community college in a black urban area has an enviroment that is more homogeneous and less dispersed.

Dynamism refers to the rate of change in the enviroment and the extent to which changes in one aspect of the environment are linked with other environmental factors--the ripple effect. The importance of dynamism can be seen in the Northeast in terms of the impact of plant closings (economic dimension) on the remaining environmental elements and the colleges and universities in the area.

I have attempted to specify the critical elements of the environment of colleges and universities. The importance of these elements is undoubtedly self-evident. The question now becomes, how can these environmental conditions be linked to the decision making process within higher education. Some partial answers to this question can be developed by a consideration of some organizational theories.

ORGANIZATIONAL THEORY

I will consider three theoretical approaches here--the population ecology, resource dependence,and institutional theories. Each approach has its advocates and critics. Each also has important applicability and severe limitations. Overall, organizational theorists are becoming more sophisticated and are attempting to use theories in simultaneous, rather than oppositional pattern (Fligstein 1985; Singh et al 1986). My purpose here is to indicate how these theoretical perspectives can illuminate the decision making process.

The population ecology model is essentially an environmental determinist approach to organizations. Aldrich and Pfeffer (1976), Hannan and Freeman (1977), Aldrich (1979), McKelvey (1982), McKelvey and Aldrich (1983), Bidwell and Kasarda (1985), and Hannan and Freeman (1988) have presented the major arguments supporting this perpective (See Young 1988 for a devastating criticism of the model). According to Aldrich and Pfeffer (1976, p. 79) "enviromental factors select those organizational characteristics that best fit the enviroment." The causal ordering here is from the enviroment to the organization. This is Darwinian natural selection.

The logic of the population ecology model is that variations occur in organizational forms. These variations can be planned or unplanned. Once variations occur, the election process takes place, with variations that fit the environment being selected for survival, and those that do not fit selected for extinction. Once selected, organizational forms are then retained by preservation, duplication, and reproduction. In its extreme form, the population ecology model essentially dismisses the importance of decision making and management.

Most population ecology theorists claim that the approach is most applicable to populations or forms of organizations, rather than individual organizations. Thus, the hospice, for example, is a new form of organization that has emerged as medical technology in developed countries has permitted people to stay alive even with life-threatening symptoms. The abortion clinic as an organizational form was made possible by an enviromental change in the form of a court decision and could disappear by the same process. Of course, we all know what the Land Grant act did for higher education as a form.

There is another aspect of the population ecology model which is important for our consideration here. Research carried out in the population ecology tradition has identified the liability of newness and smallness." This refers to the fact that new and small organizations are very vulnerable. Garner (1983) found this to be the case among private colleges and universities in New York State--younger ones had much stronger tendency to close or merge. While the population ecology perspective may appear to be extreme, I will try to demonstrate that it in fact has relevance for institutional research and higher education decision making.

The resource dependence approach also treat the environment as crucial for organizations, but in a quite different manner (Aldrich and Pfeffer 1976; Pfeffer and Salancik 1978). In this approach, organizational decisions and actions are brought back into the equation. The argument is that no organization can generate all of the resources that it needs, nor can it perform every activity needed to make it self-sustaining. Instead the organization must turn to its environment for raw materials, personnel, finances, services, production operations,and technologies. The role of management is managing the enviroment. Strategic choice is a key element of the model--it is squarely a decision making approach to organizations, with the focus on externalities. According to Aldrich and Pfeffer (1976, p.87) organizational actions are "conscious, planned responses to environmental contingencies. Organizations attempt to absorb interdependence and uncertainty either completely, as through merger,--or partially, as through cooperation,--or movement of personnel among organizations--."

Decision makers have autonomy, according to this perspective. They can decide how to structure their organization to fit the enviromental niche in which they are operating. They can also attempt to manipulate the environment itself to make it more favorable for the organization. The focus of the resource dependence model is on the environment and the organizational response to it. This is a limitation, in my opinion, but few would deny the importance of obtaining resources. We will shortly consider the extent to which resource dependence is the sole basis for organizational decision making.

The institutional model has become the darling of the late 1980s. The model is associated with the works of Meyer and Rowan (1977), Meyer and Scott (1983), DiMaggio and Powell (1983), DiMaggio (1988), Scott (1988), and Zucker (1988) and appears to be particularly well suited for organizations like colleges and universities (Pfeffer 1982).

The institutional model contains two distinct strands of relevance for us. The first strand says the organizations within the same field tend to become isomorphic because they share a common belief system. This common belief system emerges as organizations exchange key professional personnel, as they mimic each other's practices,and as they react to enviromental forces, such as government regulations. Again, this conference is a classic case of organizations in the same field exchanging ideas.

The second strand of institutional theory deals with the fact that organizational practices come to be given a value of their own over time. Practices turn into belief systems. Thus, when a practice is brought into an organization by one of its professional staff members, the practice becomes part of the organizational value system.

A key component of institutional theory is that the organizations involved have an indeterminant technology--cause and effect relationships are not clear. This would clearly fit our colleges and universities. My own observation is that the institutional approach is strikingly powerful in our setting. The movement of key administrators, meetings such as this, the mind set of institutional researchers, and the absence of clear standards of judgement lead our organizations to be perfect specimens of institutional theory. At the same time, I personally believe that there are some major shortcomings of this approach and will touch upon them briefly in the next section.

CAN INSTITUTIONAL RESEARCH MAKE A DIFFERENCE IN ALL OF THIS?

My own answer to this question is a strong and positive YES. I will try to develop the reasons for this answer, but let me first briefly review where this discussion has gone. I first summarized the major approaches to decision making. The incrementalist, garbage can, and dual rationality approaches all are strong denials of a simplistic rational approach to decision making in which in there are clear alternatives which can be evaluated on some sort of cost-benefit analysis. I next reviewed the multi-dimensional and constantly changing environment of organizations which can be a bewildering mosaic in which decisions have to be made. I then considered our dominant organizational theories which either see no real role for institutional research at all, as in the population ecology model; would force institutional research to look only at resource acquisition, as in the resource dependence model; or constantly remind institutional research that it can only mimic what is happening at other similar institutions. If all of this were to be completely accurate, organizational theory would have succeeded in taking over from economics the title of the dismal science.

I am going to try to develop the case that things are not as dismal as they might at first appear. In order to do so, I am going to assume that Hickson is right and that the dual rationality approach to decision making is an appropriate model. This is not to deny, and Hickson himself does not deny, that there are strong elements of both incrementalism and garbage can causal ordering in the attempts to dual rationality. Nonetheless, rationality is intended.

If we begin with the population ecology approach we can see that our organizations face strong technological, economic, demographic and so on kinds of environmmental pressures. There are several things we must realize, however. First, all of our organizations (perhaps not really all) have already survived the vulnerability of newness and smallness. We have reached the stage where even some population ecologists admit that their theory has fewer insights than it might have had in an earlier time in the history of colleges and universities.

A second point we can glean from the population ecology approach is that some programs at our colleges and universities do face highly uncertain futures as they struggle for survival. Without getting into a case study of Albany or other campuses where I have worked or consulted, I can think of numerous programs which have disappeared because of no or low enrollments (demographic dimension), elimination of financial support, or strong faculty or student opposition (political dimension). I can also think of programs that have failed because they simply did not work well in the setting in which they were inserted (technological dimension). The point for institutional research here is that new programs are like new organizations—they are highly vulnerable. They exist in a pressure-filled environment that contain the dimensions that have been described.

Institutional research has an important role in regard to established programs within colleges and universities. Hambrick and D'Aveni (1988) have recently analyzed the patterns associated with the "downward spiral" that corporations take on their paths to bankruptcy. Their research found some tell-tale signs of serious problems up to ten years prior to the final corporate failure. It appears to me that institutional research might well monitor the organizational health of programs and try to determine when programs are facing problems before they become serious.

The population ecology approach can inform us about one other matter. This is that the environment is real out there. The demographic conditions that we all face are not in the minds of the beholders. Organizations do face concrete environmental threats. Another role for institutional research is to monitor and interpret this enviroment.

The resource dependence approach is informative if we add something to it. None of the discussion thus far has mentioned goals at all. Hickson does not use the term in his approach to dual rationality--indeed, I think he skirts the issue. My own perception is that obtaining scarce and valued resources is a major component of the decision making process. SO TOO ARE THE PRESENCE OF GOALS. In my opinion, the resource dependence approach is only one side of the decision making equation.

Bringing goals into the picture does not make things simpler. It rather makes life much more complicated. The goals that our colleges and universities attempt to achieve are frankly multiple and incompatible, as are the environmental pressures faced. At the same time we do not acquire resources simply for the sake of acquiring them. We do attempt to develop and disseminate knowledge, plus do a myriad of other things. This means that institutional research must be mindful of just what the organization is attempting to accomplish in its complicated environment. This also means that colleges and universities, and their institutional research wings, must be able to live with ongoing contradictions and cross pressures. By opening up the resource dependence model, we are thus able to see more of the organizational whole we are attempting to understand.

The institutional model contains some crucial insights for us. We here are the embodiment of institutional knowledge and skills. While the institutional model contains a good number of insights, it contains elements that have a potentials for organizational problems. It also misses a crucial consideration.

One of the major ideas developed by DiMaggio and Powell (1983) is that organizations exist in "fields" of other similiar organizations. I know that Albany regularly compares itself with a set what are perceived to be peer campuses (who shall go nameless). Probably most of the colleges and universities represented here belong to such fields, which are sometimes formalized through athletic conferences or other forms of consortia. One potential problem is that an organization can select the wrong set of other organizations for their comparisions. I vividly remember one instance when I was serving as Vice President. Another vice president (not an institutional researcher, by the way) began comparing Albany with set of other universities (which shall also go nameless) which frankly did not and could not achieve the quality that Albany was clearly seeking. Continued comparisions with an inappropriate field have potential for leading an organization down an inappropriate path.

The second potential field problem can occur when the field selected is appropriate at one point in time, but with changes in the wider environment, the field becomes inappropriate. My example here comes from CIC schools (the Big-10 universities, plus Chicago). At one point, and I do not remember whether I was at Indiana or Minnesota, the Big-10 schools compared themselves with each other in terms of faculty salaries. For faculty, this was fine until the rest of the country began raising salaries, but the Big-10, with their self comparisions, saw no need to make major increases. It was only after some major faculty losses that the comparision began to include places like New York, California, and Texas. The point here for institutional research is that scanning the field for comparisions is necessary and healthy, but that one must be extremely careful in composing the field for comparisons.

The institutional model misses the crucial issue of what ideas become institutional in the first place. We all know that fads and fashions sweep the higher educational landscape, but why does writing across the curriculum hit in the late 1980s, but not earlier. We could go on with examples of such developments, but the point here is simple. The institutional model does not inform us in regard to the types of ideas that will catch hold and which will not.

Finally, the institutional model also does not consider goals. As such, it falls into the trap of the resource dependence approach. Practices may be adopted because other similar organizations are doing the same popular thing. At the same time, my conclusion is that decision makers have more on their minds than simple copying. What is copied may not be completely goal directed, but it is also not random.

What does all of this mean for Institutional Researchers? That is your questions to answer--probably beyond my earshot. I do think that there are a couple of major conclusions that can be reached. First, the environments of our institutions have complex and interactive influences on the institutions. But, you already know that as conventional wisdom. Organizational theories provide, in my opinion, some major advances on conventional wisdom. Population ecology tells us that there is a strong sense of inevitability in regard to some environmental pressures. Resource dependence theory reminds us that the acquisition of scarce and valued resources are a crucial component of decision making. Institutional theory alerts us to be extremely careful in our choice of organizational comparisions and to be very aware of the sources of our ideas.

The second conclusion involves decision making. By moving away from an unrealistic overly rational model, we can see how our information and interpretations fits into the political ebb and flow of decision making. The strength to some of the issues I have raised will be enhanced by attention to some of the issues I have raised. If we want to be "dually rational,' as opposed to perpetrators of incrementalism or denizens of garbage cans, we can only do so by a realization of the dual rationality to which we and our work is subjected.

CODA

I hope that these remarks have been helpful. Decision making in complex organizations is complex. I hope that you can return to your campuses with at least a few tunes from this in your head.
Thank you

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FACT BOOKS: PAPER-BASED OR ELECTRONIC?

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Discussions regarding various aspects of fact books have occurred at many institutional research conferences during the past two or three decades. Recently, however, the discussions have included a growing emphasis on the electronic fact book -- a fact book that is computer based and distributed electronically between campus offices via some computerized networking system. The electronic fact book seems to be getting billed as the more progressive format for sharing information usually found in fact books. Mention has often been made of the advantages the electronic fact books have with the abilities they offer to the user to offer current data that can be retrieved, restructured, and reviewed as the user desires. Speed, flexibility, and the general pizzazz that accompanies electronic media all seem to be factors adding to the growing interest in the electronic fact books.

At the same time, paper-based fact books are being increasingly referred to or regarded as passe. But are they? This paper will present some points regarding paper-based fact books that an institutional research officer should consider before making a final decision whether to direct institutional fact book efforts towards the electronic mode or towards the paper-based design. The paper will then present a series of questions an institutional researcher should ask during the development of a new fact book or the enhancement of a current fact book, regardless whether it is electronic or paper-based.

Advantages of a Paper-Based Fact Book

There are several distinct advantages of a paper-based fact book. For example:

1. IMMEDIATE ACCESS: The printed fact book is right there on or near the administrator's desk. There are no terminals to activate, passwords to remember, or systems to bring up. The book is quickly available at an arm's reach.

2. PORTABLE: The book can easily be taken to meetings to serve as a reference source for responding to unanticipated questions and information needs.

3. NO TERMINAL ACCESS LIMITATIONS: On many campuses not everyone who needs the data usually contained in a fact book has a computer terminal. Therefore, the access to a terminal defines in a most limited way who has (and does not have) access to the institutional data in a terminal based fact book.

4. PROFESSIONAL APPEARANCE: Paper-based fact book pages can be quickly copied and presented in a finished, professional format that is acceptable for sharing with trustees and other professional level audiences.

5. AUTHORITY OF THE PRINTED WORD: The printed word is sometimes regarded as having much greater authority than numbers from a computer printout or on a terminal. That differential treatment is apparently decreasing, but it has not disappeared.

6. LIMITATIONS OF THE ELECTRONIC LURE: Campus planners and institutional research personnel need to recognize that there are limitations of the electronic lure to many administrators on many campuses. For both good and not-so-good reasons, many people

still prefer paper-based information and still reject the use of a computer terminal. The fact is, however, that these people might be a important part of the constituency that should have access to a fact book.

7. BUDGET LIMITATIONS: Some smaller institutions cannot easily afford to purchase and maintain a computerized networking system and associated computer hardware and software required to adequately support data retrieval needs of multiple offices.

The Development of a Fact Book

There are several methods of developing a fact book. One of those methods involves posing a series of questions listed below. The intent of the questions is to help develop a fact book that is innovative, attractive, and responsive to the needs of the users.

QUESTION #1: WHAT DO YOU WANT YOUR FACT BOOK TO DO? WHAT ARE THE PURPOSES OF THE PUBLICATION (AND WHY ARE YOU DOING ALL OF THIS WORK, ANYWAY)?

A. Is it to inform, to tell a story about the institution or some trends within the institution? Some books that have this basic purpose are actually public relations publications. That reference is not intended to be derogatory, but in this case the fact book will include information that reaches beyond the data needs of those employed within the institution. For this type of a publication the information needs and interests of legislative groups, pressure groups, alumni groups, etc. need to be considered. Less detail, more graphics, and greater general public appeal will be a part of this type of publication.

B. Is the book to serve as an on-campus statistical reference source? If so, for what data and for whom? This is the most common purpose of fact books, and this purpose usually leads to a greater level of detail being included in the text.

C. Is the purpose of the book only to meet immediate five year and ten-year accreditation self studies data needs? This then will be a very limited publication, both in scope of information and in terms of its life expectancy. The book will also have a very limited circulation. However, the five and ten year data source goal can be part of a fact book with a broader goals, including some combination of the two mentioned above.

D. Is the purpose of the book to meet departmental self studies data needs? This singular goal will result in a text that is even more limited in scope, but still be very helpful to departments. Again, however, this purpose can be part of a broader set of goals for the publication.

QUESTION #2. WHO GETS WHAT DATA IN WHAT FORMAT AND WHEN DO THEY GET IT?

A. WHO GETS...

The answer to this will be, in part, determined by the purpose and goals of the fact book. The public relations type of book will get wide spread circulation, while the other goals will mean less copies are needed.

B. ...WHAT DATA IN WHAT FORMAT...

One of the best ways to determine this is to list the types of data requests the campus institutional research office gets most often. Determine a cut off point somewhere on the list, depending on the anticipated size of the book (and therefore, the cost), and review these potential table topics for data availability and expected accuracy, political sensitivity, general interest, etc.

Space might not permit all the various breakdowns of the data an institution might initially want to include, but the reader can always telephone for additional data if needed.

A fact book will be more useful to the reader if it is divided into different topical sections such as: enrollment, admissions, staff information, alumni, finances, space and facilities, degree information, etc. Also, consider a general section for miscellaneous topic information that might be important to the readers but which is not of sufficient length to merit a separate section. A fact book could also contain an "executive summary section" that give a quick source of summary facts most often requested by upper level administrators.

A distinct advantage of compiling a fact book is that the process offers a very handy management tool to resolve some longstanding differences between conflicting data sources. If the data in a fact book are well researched and documented, they eventually become the accepted information regardless of the existence of conflicting (and perhaps, self-serving) statistical information.

C. ...AND WHEN AND HOW DO THEY GET IT?

Hopefully, updated information will be produced and distributed as soon as the data are available. The use of loose leaf notebooks has worked very well at some institutions. One of the disadvantages of fact books whose pages are bound by printers and are not in loose leaf containers is that the information in these bound books are obsolete as soon data updates become available or when errors are discovered in the bound text.

Updating (or correcting) with a loose leaf book is quite simple. An office can keep the various data tables on word processing or spreadsheet software and simply update the information as soon as new data are available for a specific table. The updated tables (or several tables) can then be sent out in pre-addressed envelopes to the people who have fact books. Instructions can be included with the new pages that direct the recipients to put the new data pages into the notebook and to discard the old tables.

For this type of updating, it is helpful if each table has a revision date to insure when people call regarding a question about the data, the institutional research office can insure the caller has the latest information in their hands.

QUESTION #4: WHAT WILL THE BOOK LOOK LIKE?

Use an eye catching color and cover design that will make the book stand out on a shelf. Several advantages of the looseleaf design were mentioned above, but another advantage is that the looseleaf notebook will stand up on a bookshelf and be easier to locate and retrieve.

As part of a plan for later expansion of a fact book to meet the changing needs of the recipients, the design might include a page numbering system that is consecutive only for each topic section. This will permit the addition of tables as needed without requiring the renumbering and reprinting of the entire book.

A SUGGESTION: JUST SAY NO

A fact book can grow to be too large, and therefore become intimidating and awkward to its users, resulting in a diminished value to its users. Sometimes institutional research officers have to tactfully say no to requests or suggestions for the inclusion of data that are used only by very few fact book recipients.

ANOTHER SUGGESTION: DEFINE THAT TERM!

Some fact books contain a terms definitions section. Usually, it is helpful to use the definitions from a system of which your institution is a member or from a nationally accepted source of higher education definitions of terms. Again, the definitions that would be included would depend on your experience with and feel for the level of sophistication of the fact book recipients, plus your experience with what terms are questioned the most.

In conclusion, a paper-based fact book can be a viable asset to many groups and individuals at higher education institutions. The institutional research officer need only apply some basic marketing skills, some imagination, and a lot of hard work to offer a valuable information source to a campus community.

ELECTRONIC FACTBOOKS

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Problem: Data Information for Federal, State and Local Users

The Office of the Chancellor, State System of Higher Education, needed immediate access to data by means of data transmission over telephone lines from a host institution.

The method worked on during the past three years has been the development of an electronic data information system called SIR (System Information Retrieval). The System Director of Research and Planning, the computer systems analsyt at the host institution, the institutional research directors and computer center directors, including yours truly, were instrumental in building the system.

Part of the Solution:

Beginning in the Fall of 1985, the System Director of Research and Planning began meeting with the computer center directors regarding the development of a plan to pass data information among the individual institutions and other users.

Immediate problems developed over what data would be collected, when, and by whom. In most cases, these problems have been solved with much knashing of teeth and many cries of anguish. "It can't be done or we don't ask for the data." Obviously, it has taken a good deal of time to iron out what is available and what can be tolerated when the data is absolutely not available. Compromises have been worked out so that all individuals involved have felt they provided some kind of input into the final product.

It was agreed that those immediately affected must have some say as to how the information is gathered and reported to the Office of the Chancellor. This would make the decisions less of a burden for all facets of the university community. There is, of course, the problem that some institutional areas find that changes can be extremely worrisome. This is all the more obvious when some sacred cows are gored. The approved list of academic programs is one example.

Reporting Process to the Office of the Chancellor:

A student data collection plan has been produced and is updated on an annual basis. This plan is constantly under revision and is used each year to make data reporting easier for each individual institution. The IPEDS and, for Pennsylvania, the OCR or as they are now called the PDE (Pennsylvania Department of Education) forms are produced from the student data tape or Symphony spreadsheets by use of diskette-templates.

Each System university submits a tape to the host institution where files are created by reading the tapes via the DITTO program, an IBM utility. The files are then edit checked by programs invoked under SAS/AF. The files which pass the edit checks are then written to SAS data sets. Once the data sets are created, summary reports are then produced for submission to federal and state agencies using the federal grant tape formats.

While submitting data, the System universities are also accessing the data thru CMS via dialup modems to the host institution's computer. Each university has a password that allows the institution to automatically link up thru CMS to SSHENET (repository user id) and then is able to access SIR (the data base information previously summarized) which operates under SAS/AF. The individual university can also edit some of the data on the minidisks. This is undertaken by the same dialup modems and using SAS/AF which invokes SAS/FSP. When the user exits the edit program, another user can use the common write disk. This prevents a large bottleneck if all 14 institutions wanted to edit at the same time. This aspect of the program is still undergoing revisions and changes to effect even more quicker data turn around.

Data Information Formats:

The following overhead transparencies will show what the system looks like to the user and how data displays are summarized in order to respond to inquiries by university presidents, legislators, and others:

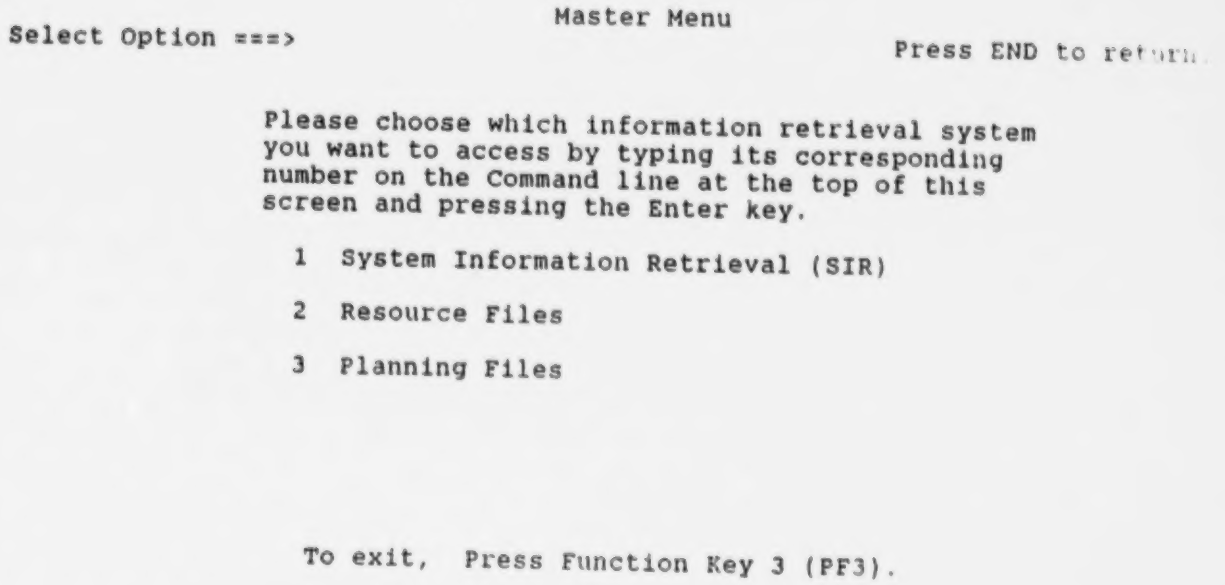
Main Menu of SIR--

Enrollment Information (example)--a combination of institutions, or all State System universities. This information is in IPEDS format so that an individual could use specific line numbers to view particular types of information.

The information available today on the SIR program is current data only. The SIR program will have historical data available in the near future. This will be taken from current Symphony worksheets and added to an historical file by means of Symphony macro ASCII file creation with subsequent transfer to the host mainframe as a CMS file via SAS DS and then added to the SIR menu system.

Each individual menu file has its own access system, i.e., what the user must do to get the information he or she wants. This method was used since it is unlikely that an administrator will sit in front of a computer screen and try to figure out what is needed. As is mostly the case, there is instant data access by the push of a button or pressing of a key. A continuing problem is that in some cases it is still easier for an individual to call and ask for information rather than use the retrieval system. This will change with more education and further demonstration of the system as it evolves.

One final note--the system is still in its infancy stage and, hopefully, will improve when it is more readily used by all System institutions. My thanks to Kerry Moyer (System Director of Research and Planning), Robert Lahr (Computer Systems Analyst), and the research and computer center directors for helping get the SIR program off and running.



```
                              Master Menu
Select Option ===>
                                                   Press END to return.

                  Please choose which information retrieval system
                  you want to access by typing its corresponding
                  number on the Command line at the top of this
                  screen and pressing the Enter key.

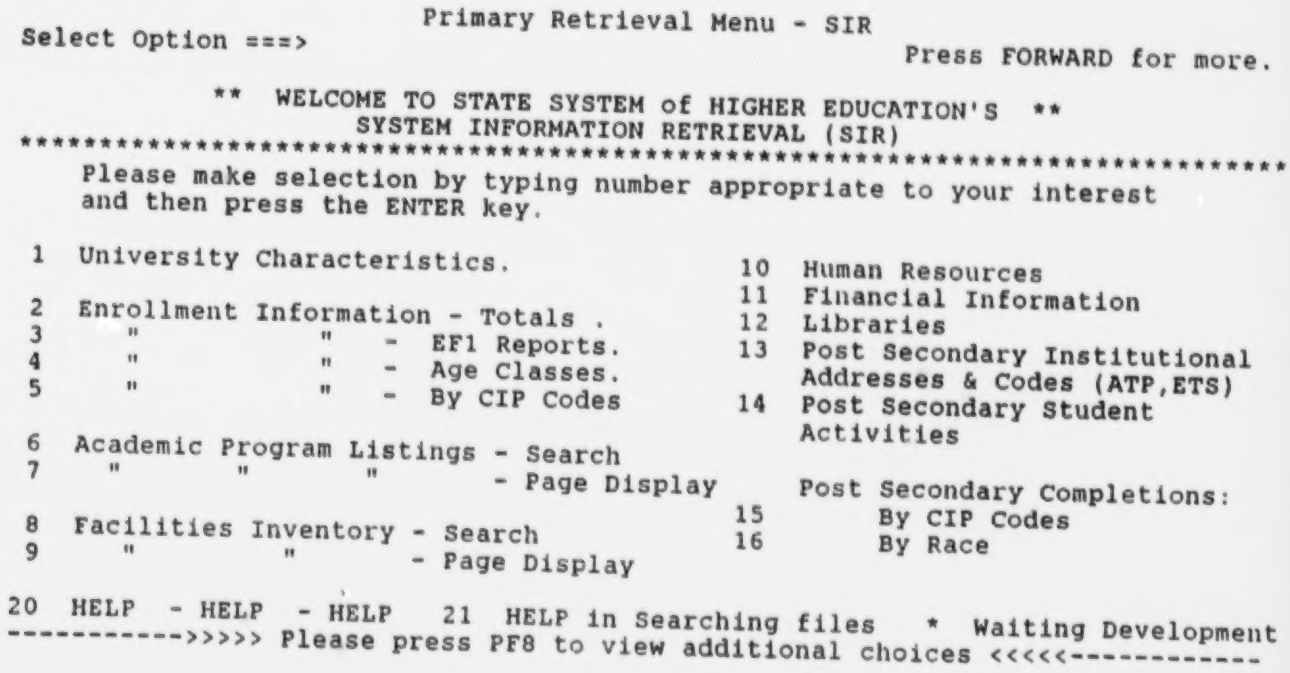
                     1  System Information Retrieval (SIR)

                     2  Resource Files

                     3  Planning Files



                     To exit,  Press Function Key 3 (PF3).
```



```
                        Primary Retrieval Menu - SIR
Select Option ===>
                                                   Press FORWARD for more.

         **  WELCOME TO STATE SYSTEM of HIGHER EDUCATION'S  **
                    SYSTEM INFORMATION RETRIEVAL (SIR)
*******************************************************************************
   Please make selection by typing number appropriate to your interest
   and then press the ENTER key.

 1  University Characteristics.              10  Human Resources
                                             11  Financial Information
 2  Enrollment Information - Totals .        12  Libraries
 3     "            "      -  EF1 Reports.   13  Post Secondary Institutional
 4     "            "      -  Age Classes.       Addresses & Codes (ATP,ETS)
 5     "            "      -  By CIP Codes   14  Post Secondary Student
                                                 Activities
 6  Academic Program Listings - Search
 7    "       "       "       - Page Display     Post Secondary Completions:
                                             15       By CIP Codes
 8  Facilities Inventory - Search            16       By Race
 9     "         "       - Page Display

20  HELP  - HELP  - HELP   21  HELP in Searching files   *  Waiting Development
----------->>>>> Please press PF8 to view additional choices <<<<<------------
```

```
                          Primary Retrieval Menu - SIR
Select Option ===>
                                                        Press FORWARD for more.
Congressional Addresses:

17  Pennsylvania House
18        "      Senate
19  U.S. Congress  *

Enrollments by Congressional Districts:

22  Pennsylvania House
23        "      Senate
24  U.S. Congress *

Alumni by Congressional Districts:

25  Pennsylvania House *
26        "      Senate *
27  U.S. Congress *


------------>>>>> Please press PF7 to view previous choices <<<<<------------
```

```
                              GENERAL.HELP
Command ===>
                                                        Press END to return.

                 Helpful Information for Accessing SSHE
                 Computerized Information Data Bases.
 **********************************************************************

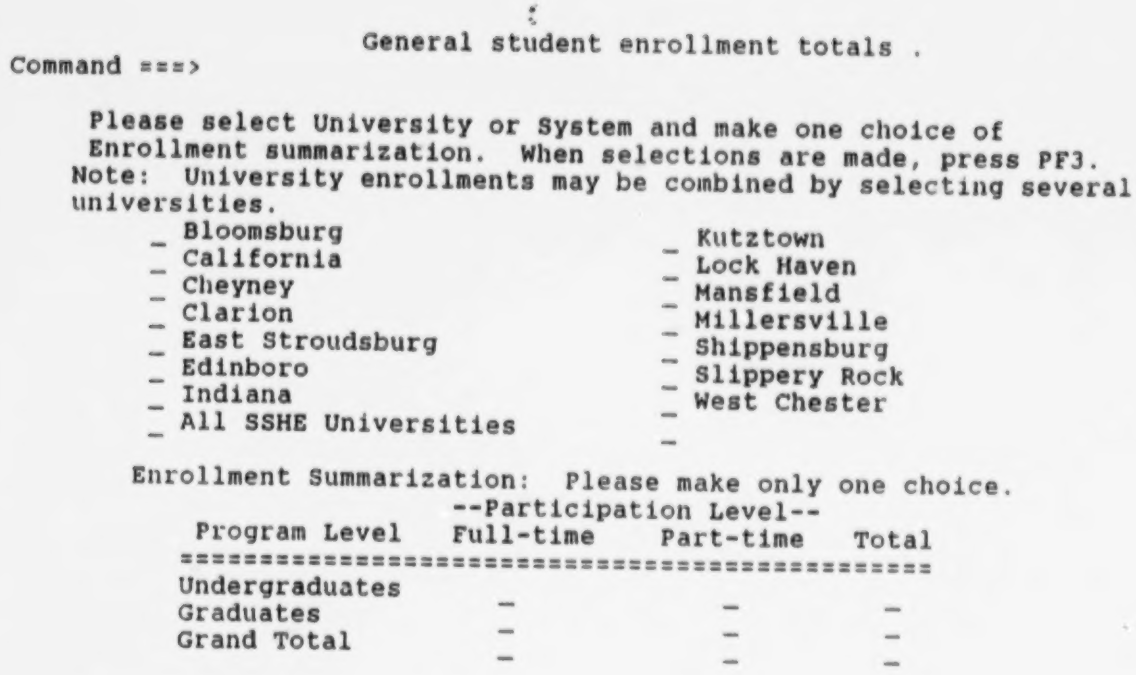
 You control information retrieval via interaction with two types of
 screens, namely Menu and Program.  Menu screens contain numbered choices,
 while Program screens contain underlined fields next to the choices.

 You make selections from Menu screens by typing the number associated
 with that selection on the "Command" line and then press the ENTER key.

 You make selections from Program screens by typing anything (generally
 a "X") on the dashed line.  When you have made all selections, press
 Function Key 3 (PF3).

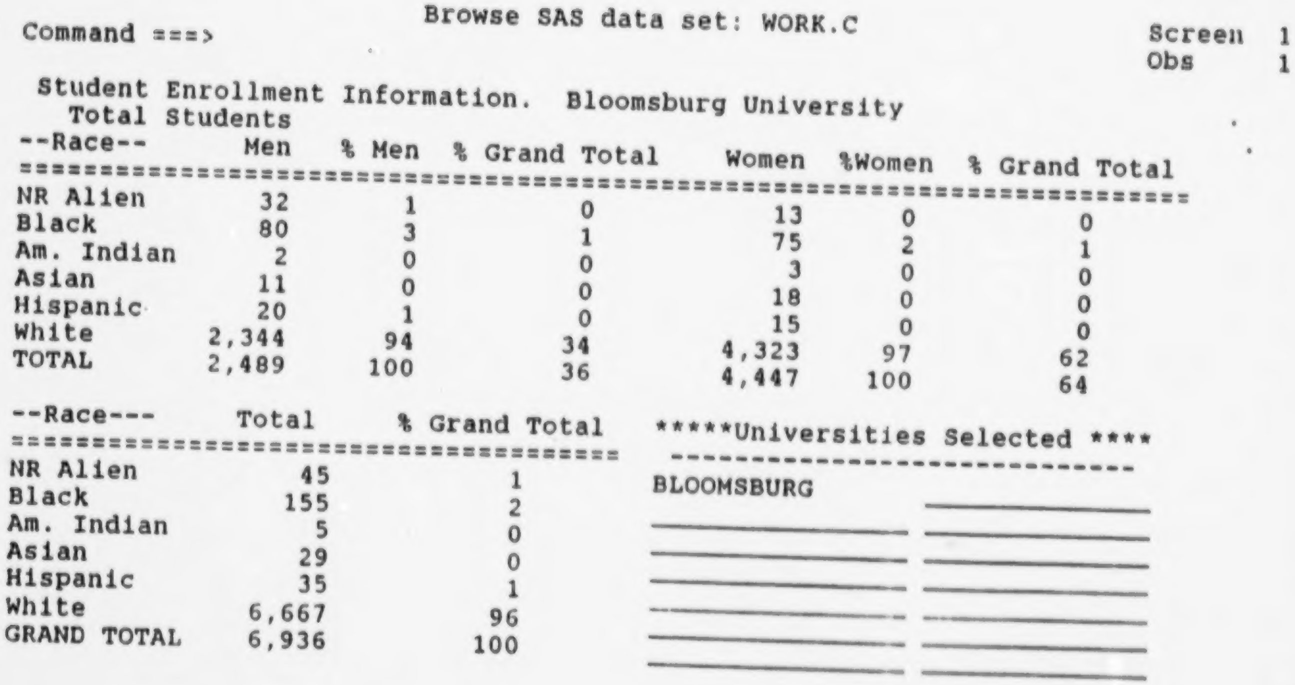
 To EXIT :  Press (PF3) from either Menu or Program screens.

                      PRESS PF3 TO RETURN TO THE MENU
```



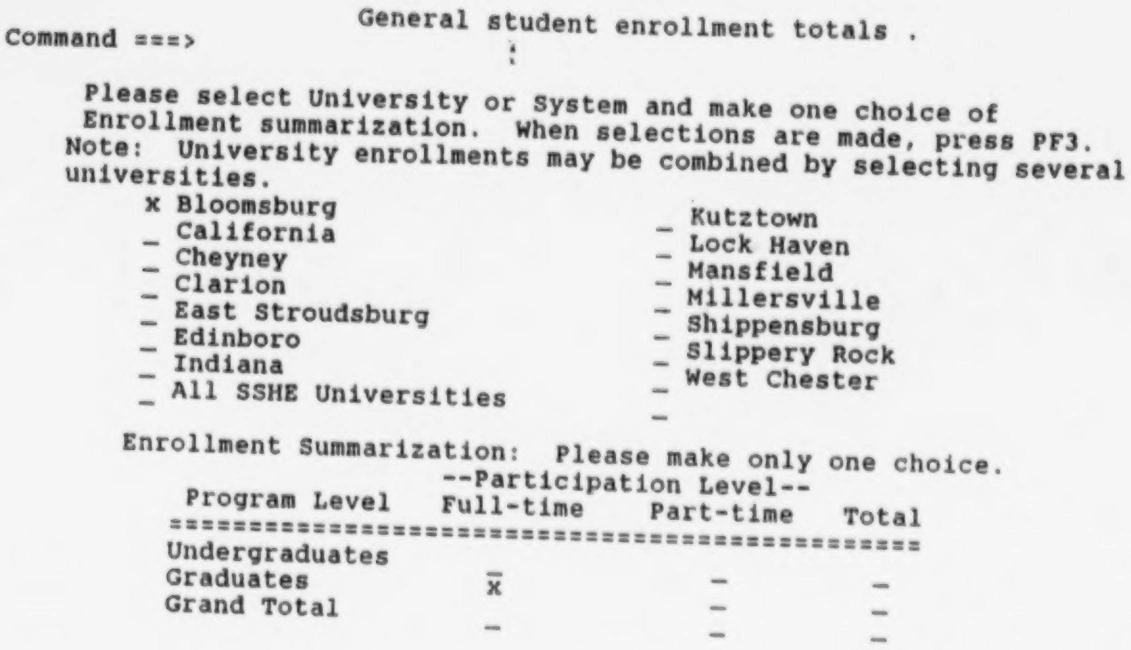
```
                         General student enrollment totals .
Command ===>

     Please select University or System and make one choice of
     Enrollment summarization.  When selections are made, press PF3.
    Note:  University enrollments may be combined by selecting several
    universities.
          _ Bloomsburg                    _ Kutztown
          _ California                    _ Lock Haven
          _ Cheyney                       _ Mansfield
          _ Clarion                       _ Millersville
          _ East Stroudsburg              _ Shippensburg
          _ Edinboro                      _ Slippery Rock
          _ Indiana                       _ West Chester
          _ All SSHE Universities         _
                                          _
       Enrollment Summarization:  Please make only one choice.
                                 --Participation Level--
          Program Level   Full-time    Part-time   Total
         ===============================================
         Undergraduates
         Graduates            _            _          _
         Grand Total          _            _          _
                              _            _          _
```



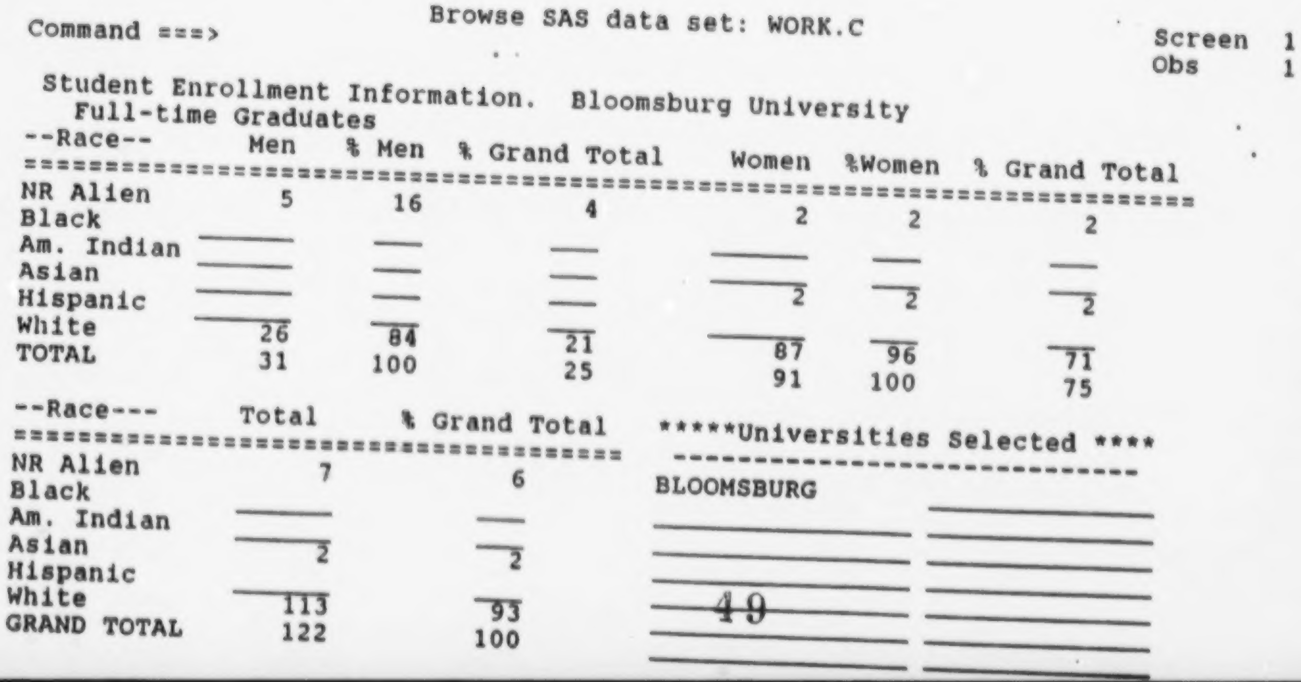
```
                            Browse SAS data set: WORK.C
Command ===>                                                         Screen  1
                                                                     Obs     1
  Student Enrollment Information.  Bloomsburg University
    Total Students
--Race--        Men   % Men  % Grand Total    Women  %Women  % Grand Total
==========================================================================
NR Alien         32      1         0            13      0          0
Black            80      3         1            75      2          1
Am. Indian        2      0         0             3      0          0
Asian            11      0         0            18      0          0
Hispanic         20      1         0            15      0          0
White         2,344     94        34         4,323     97         62
TOTAL         2,489    100        36         4,447    100         64

--Race---       Total     % Grand Total     *****Universities Selected ****
=====================================        ----------------------------
NR Alien           45          1             BLOOMSBURG
Black             155          2                             ____________
Am. Indian          5          0             ____________    ____________
Asian              29          0             ____________    ____________
Hispanic           35          1             ____________    ____________
White           6,667         96             ____________    ____________
GRAND TOTAL     6,936        100             ____________    ____________
                                             ____________    ____________
```



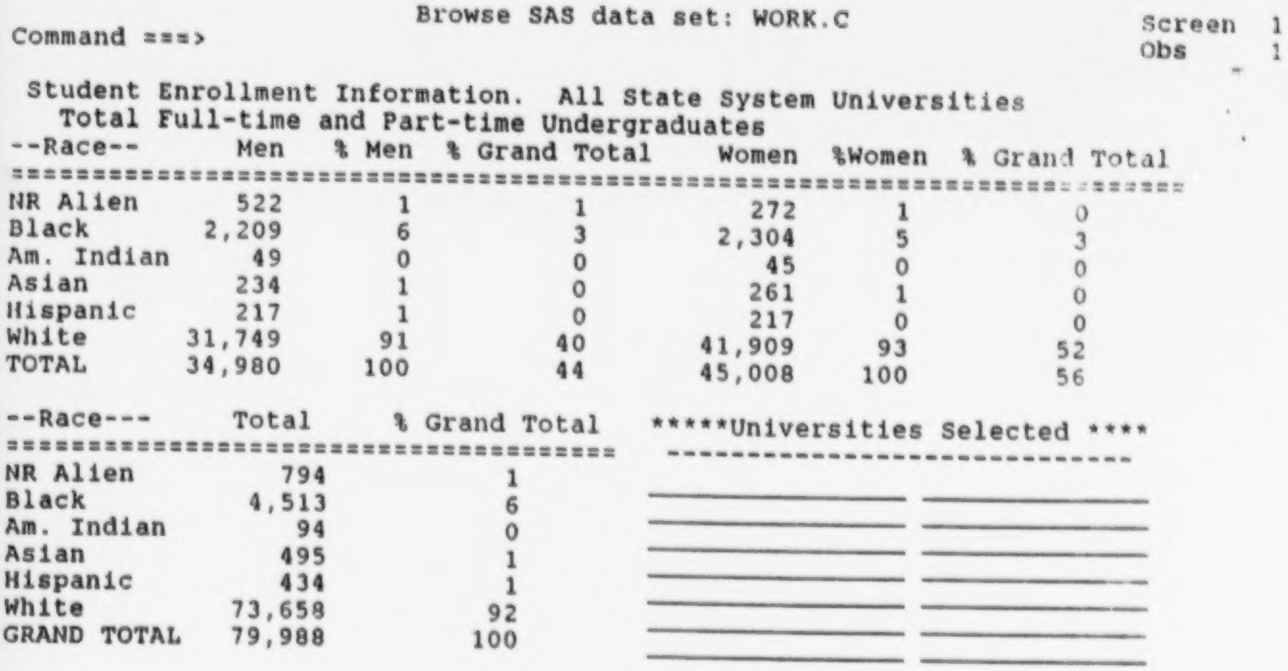
```
Command ===>               General student enrollment totals .
                                     :
     Please select University or System and make one choice of
     Enrollment summarization.  When selections are made, press PF3.
    Note:  University enrollments may be combined by selecting several
    universities.
           x Bloomsburg                      _ Kutztown
           _ California                      _ Lock Haven
           _ Cheyney                         _ Mansfield
           _ Clarion                         _ Millersville
           _ East Stroudsburg                _ Shippensburg
           _ Edinboro                        _ Slippery Rock
           _ Indiana                         _ West Chester
           _ All SSHE Universities           _

        Enrollment Summarization:  Please make only one choice.
                             --Participation Level--
          Program Level    Full-time      Part-time    Total
         ==============================================
         Undergraduates
         Graduates            x               _          _
         Grand Total                          _          _
                              _               _          _
```



```
Command ===>              Browse SAS data set: WORK.C                  Screen  1
                                    . .                                Obs     1
  Student Enrollment Information.  Bloomsburg University
    Full-time Graduates
--Race--        Men    % Men  % Grand Total    Women  %Women   % Grand Total
=============================================================================
NR Alien          5     16             4
Black                                              2       2              2
Am. Indian     ____    ___          ___       _____     ___
Asian          ____    ___          ___       _____     ___            ___
Hispanic       ____    ___          ___           2       2              2
White            26     84            21      _____
TOTAL            31    100            25         87      96             71
                                                 91     100             75

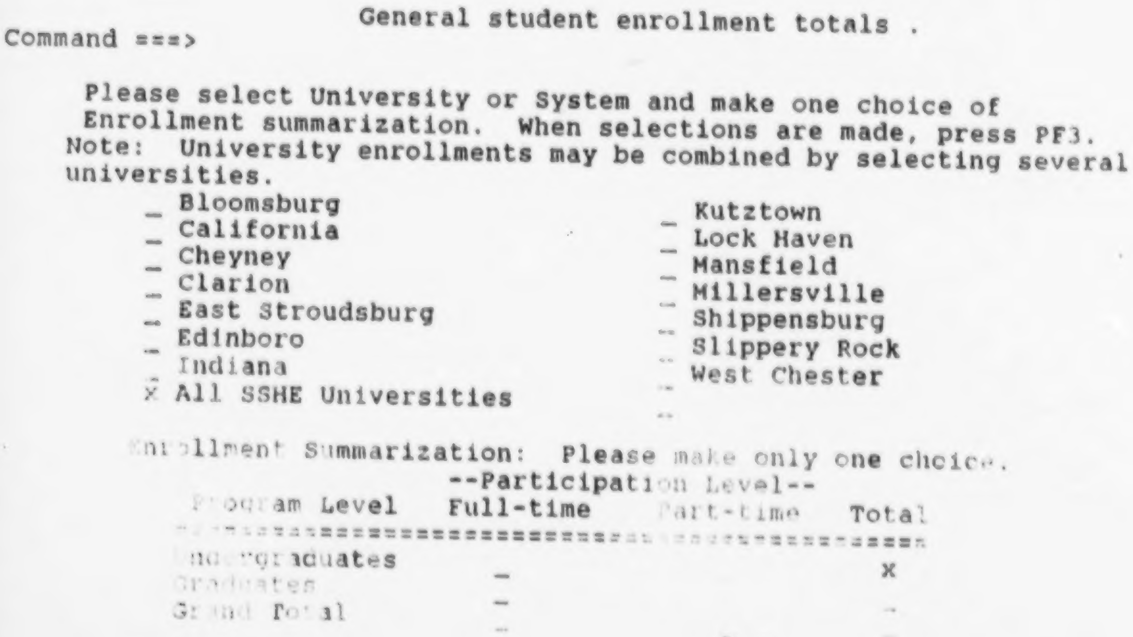
--Race---        Total       % Grand Total    *****Universities Selected ****
====================================          ----------------------------
NR Alien            7               6         BLOOMSBURG
Black                                                        ____________
Am. Indian      _____             ___         ____________   ____________
Asian               2               2         ____________   ____________
Hispanic                                      ____________   ____________
White             113              93         ____________   ____________
GRAND TOTAL       122             100         ____________   ____________
                                              ____________   ____________
```



```
                              Browse SAS data set: WORK.C                  Screen  1
Command ===>                                                               Obs     1

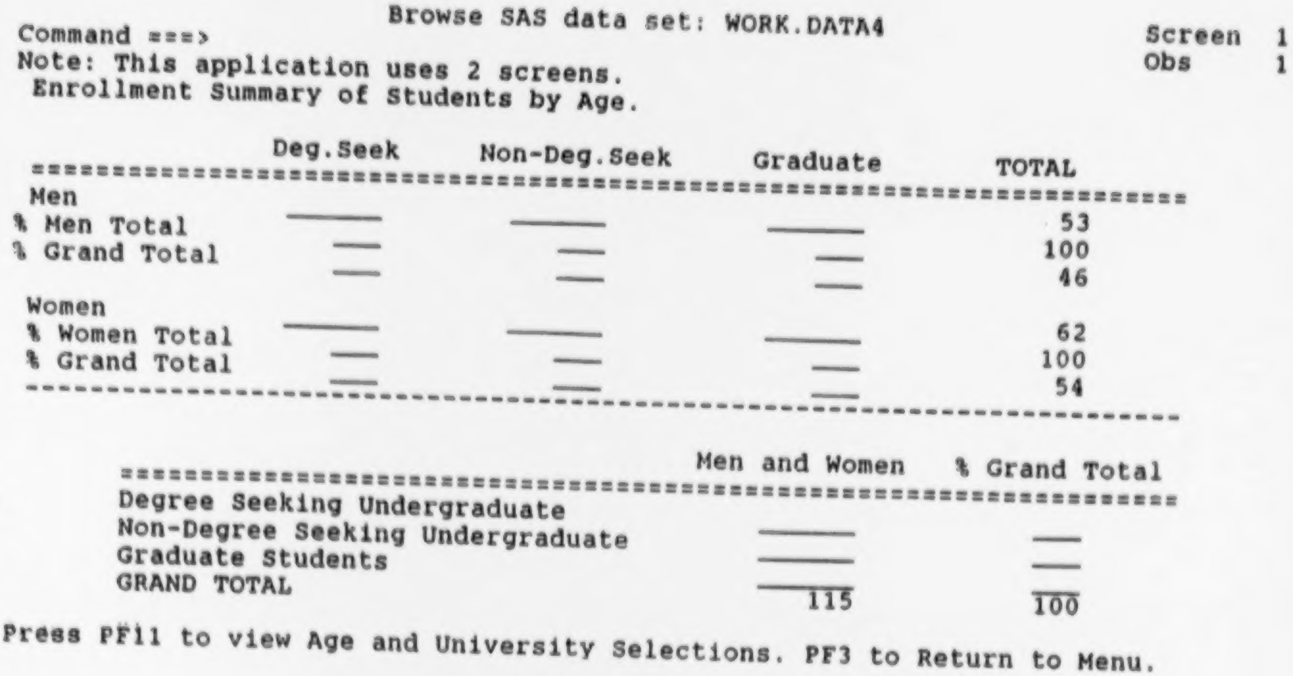
 Student Enrollment Information.  All State System Universities
   Total Full-time and Part-time Undergraduates
--Race--       Men   % Men  % Grand Total    Women  %Women  % Grand Total
==========================================================================
NR Alien       522       1         1           272       1          0
Black        2,209       6         3         2,304       5          3
Am. Indian      49       0         0            45       0          0
Asian          234       1         0           261       1          0
Hispanic       217       1         0           217       0          0
White       31,749      91        40        41,909      93         52
TOTAL       34,980     100        44        45,008     100         56

--Race---     Total     % Grand Total   *****Universities Selected ****
======================================   ----------------------------
NR Alien        794           1         _______________  _____________
Black         4,513           6         _______________  _____________
Am. Indian       94           0         _______________  _____________
Asian           495           1         _______________  _____________
Hispanic        434           1         _______________  _____________
White        73,658          92         _______________  _____________
GRAND TOTAL  79,988         100         _______________  _____________
```



```
                    General student enrollment totals .
Command ===>

    Please select University or System and make one choice of
    Enrollment summarization.  When selections are made, press PF3.
   Note:  University enrollments may be combined by selecting several
   universities.
        _ Bloomsburg                      _ Kutztown
        _ California                      _ Lock Haven
        _ Cheyney                         _ Mansfield
        _ Clarion                         _ Millersville
        _ East Stroudsburg                _ Shippensburg
        _ Edinboro                        _ Slippery Rock
        _ Indiana                         _ West Chester
        x All SSHE Universities           _
                                          _
     Enrollment Summarization:  Please make only one choice.
                          --Participation Level--
       Program Level   Full-time    Part-time   Total
      ==================================================
      Undergraduates                              x
      Graduates            _
      Grand Total          _                      _
                           _                      _
```

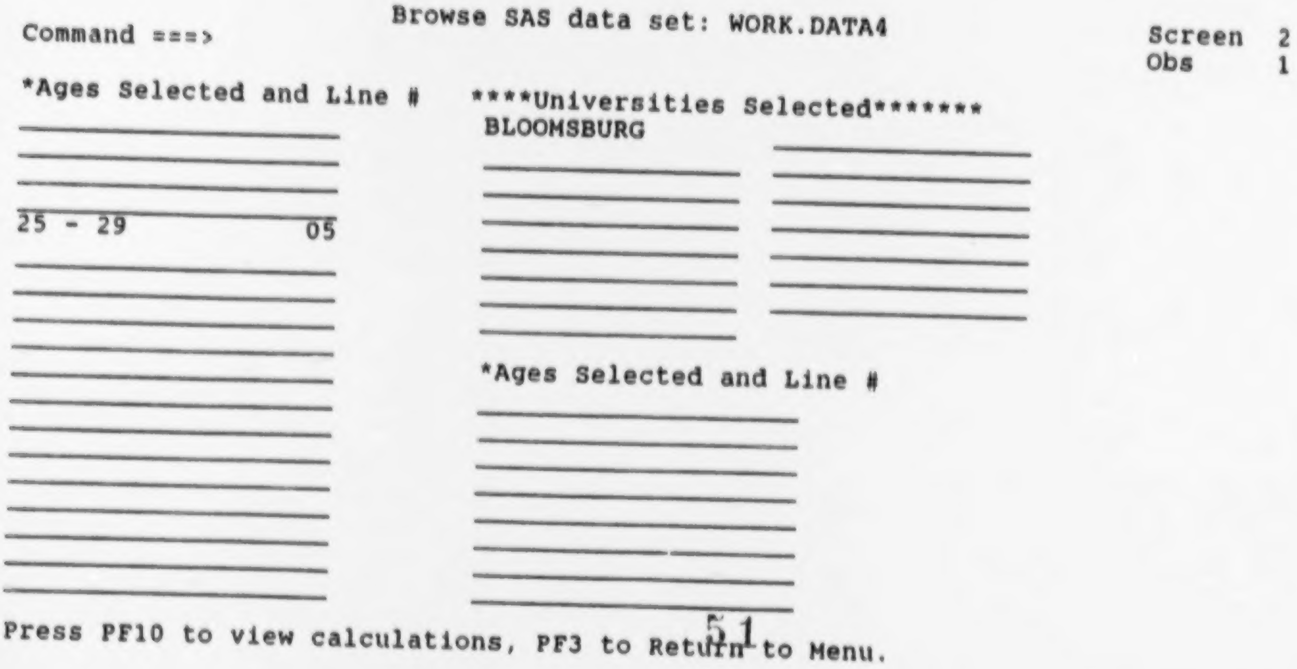


```
                         Browse SAS data set: WORK.DATA4
Command ===>                                                          Screen   1
Note: This application uses 2 screens.                                Obs      1
 Enrollment Summary of Students by Age.

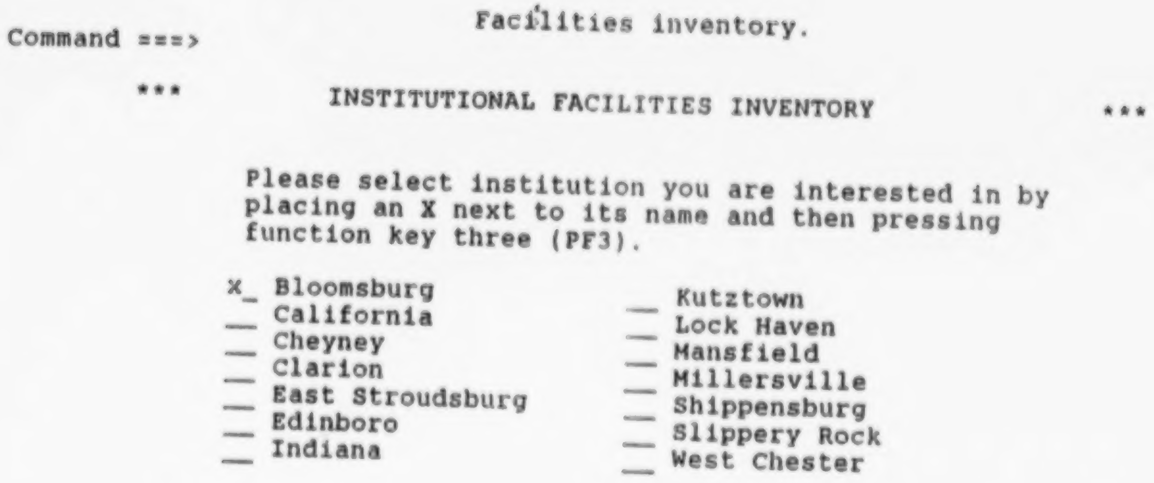
                     Deg.Seek      Non-Deg.Seek      Graduate       TOTAL
 ===========================================================================
 Men
% Men Total          ______        ______            ______            53
% Grand Total          ___           ___               ___            100
                       ___           ___               ___             46

 Women
 % Women Total       ______        ______            ______            62
 % Grand Total         ___           ___               ___            100
 ----------------------___-----------___---------------___-------------54---
                                                                             

                                          Men and Women    % Grand Total
      ======================================================================
      Degree Seeking Undergraduate
      Non-Degree Seeking Undergraduate     ______           ___
      Graduate Students                    ______           ___
      GRAND TOTAL                          ______
                                             115            100
Press PF11 to view Age and University Selections. PF3 to Return to Menu.
```



```
                        Browse SAS data set: WORK.DATA4
Command ===>                                                        Screen  2
                                                                    Obs     1
*Ages Selected and Line #    ****Universities Selected*******
_____________________         BLOOMSBURG
_____________________                                 ________________
_____________________         ________________        ________________
_____________________         ________________        ________________
25 - 29            05         ________________        ________________
_____________________         ________________        ________________
_____________________         ________________        ________________
_____________________         ________________        ________________
_____________________         ________________
_____________________
_____________________         *Ages Selected and Line #
_____________________         _____________________
_____________________         _____________________
_____________________         _____________________
_____________________         _____________________
_____________________         _____________________
_____________________         _____________________
_____________________         _____________________
                              _____________________
Press PF10 to view calculations, PF3 to Return to Menu.
```

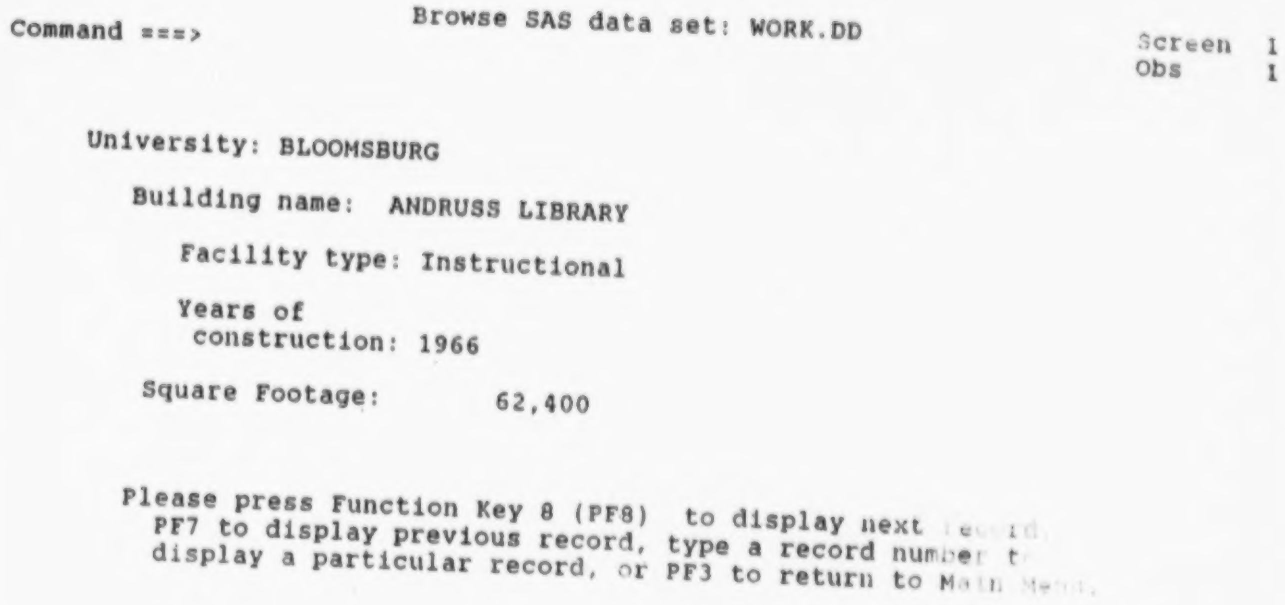


```
                                Facilities inventory.
Command ===>

      ***          INSTITUTIONAL FACILITIES INVENTORY               ***

               Please select institution you are interested in by
               placing an X next to its name and then pressing
               function key three (PF3).

               x_ Bloomsburg                __ Kutztown
               __ California                __ Lock Haven
               __ Cheyney                   __ Mansfield
               __ Clarion                   __ Millersville
               __ East Stroudsburg          __ Shippensburg
               __ Edinboro                  __ Slippery Rock
               __ Indiana                   __ West Chester
```



```
                           Browse SAS data set: WORK.DD
Command ===>                                                      Screen   1
                                                                  Obs      1

    University: BLOOMSBURG

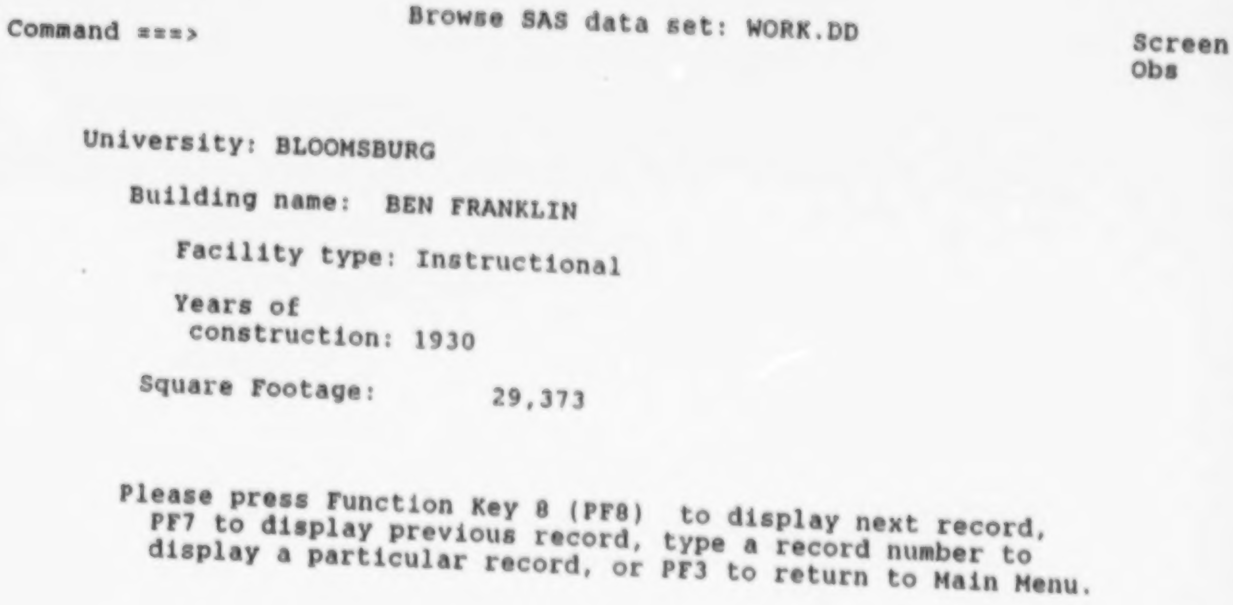
      Building name:  ANDRUSS LIBRARY

        Facility type: Instructional

        Years of
         construction: 1966

       Square Footage:       62,400


     Please press Function Key 8 (PF8)  to display next record,
       PF7 to display previous record, type a record number to
       display a particular record, or PF3 to return to Main Menu.
```



```
Command ===>             Browse SAS data set: WORK.DD
                                                                Screen
                                                                Obs

     University: BLOOMSBURG

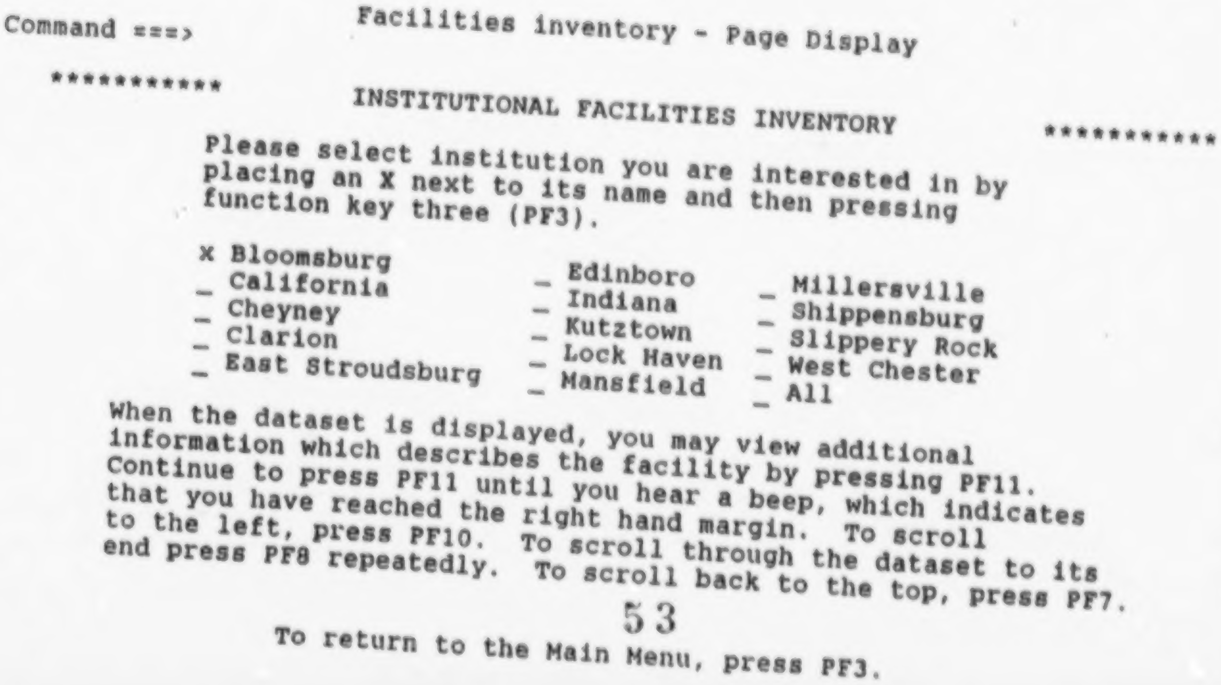
        Building name:  BEN FRANKLIN

           Facility type: Instructional

           Years of
            construction: 1930

         Square Footage:        29,373


       Please press Function Key 8 (PF8)  to display next record,
         PF7 to display previous record, type a record number to
         display a particular record, or PF3 to return to Main Menu.
```



```
Command ===>          Facilities inventory - Page Display

  ***********         INSTITUTIONAL FACILITIES INVENTORY        ***********

           Please select institution you are interested in by
           placing an X next to its name and then pressing
           function key three (PF3).

           x Bloomsburg          _ Edinboro        _ Millersville
           _ California          _ Indiana         _ Shippensburg
           _ Cheyney             _ Kutztown        _ Slippery Rock
           _ Clarion             _ Lock Haven      _ West Chester
           _ East Stroudsburg    _ Mansfield       _ All

      When the dataset is displayed, you may view additional
      information which describes the facility by pressing PF11.
      Continue to press PF11 until you hear a beep, which indicates
      that you have reached the right hand margin.  To scroll
      to the left, press PF10.  To scroll through the dataset to its
      end press PF8 repeatedly.  To scroll back to the top, press PF7.

                To return to the Main Menu, press PF3.
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Command ===>                  SAS Data Set: WORK.DD
                                                                 Observations
BLDNAME                                                          First      1
                                         TYPEFAC                 Last      19
ANDRUSS LIBRARY
BAKELESS HALL                            Instructional
BEN FRANKLIN                             Instructional
BOYER BUILDING                           Instructional
CARPENTER SHOP                           Instructional
CARVER HALL                              Administrative
CENTENNIAL GYM                           Instructional
COLLEGE STORE & SECURITY                 Instructional
COLUMBIA HALL                            Student Service
ELWELL HALL                              Residential
GREENHOUSE                               Residential
HAAS AUDITORIUM                          Service
HARTLINE SCIENCE CENTER                  Instructional
HEATING PLANT                            Instructional
KEHR STUDENT UNION                       Utility
LOWER CAMPUS HPE FACILITY                Student Service
LUZERNE HALL                             Instructional
LYCOMING HALL                            Residential
MAINTENANCE CENTER                       Residential
                                         Administrative
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Command ===>                  SAS Data Set: WORK.DD
                                                                 Observations
BLDNAME                                                          First      1
                                         CONSTYRS                Last      19
ANDRUSS LIBRARY                                                   GSFMON
BAKELESS HALL                            1966
BEN FRANKLIN                             1968                     62,400
BOYER BUILDING                           1930                     61,399
CARPENTER SHOP                           1919                     29,373
CARVER HALL                              1938                      1,482
CENTENNIAL GYM                           1867                      7,994
COLLEGE STORE & SECURITY                 1939                     27,356
COLUMBIA HALL                            1956                     58,882
ELWELL HALL                              1970                     48,944
GREENHOUSE                               1968                     86,615
HAAS AUDITORIUM                          1942                    150,517
HARTLINE SCIENCE CENTER                  1967                        189
HEATING PLANT                            1969                     77,322
KEHR STUDENT UNION                       1938,53,54               74,600
LOWER CAMPUS HPE FACILITY                1973                     30,894
LUZERNE HALL                             0                        50,804
LYCOMING HALL                            1967                      1,980
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A COMPARATIVE ANALYSIS OF COMMUNITY COLLEGE ADMINISTRATORS' AND ADULT EVENING CREDIT COURSE STUDENTS' ATTITUDES TOWARD COLLEGE PROGRAMS, SERVICES AND ENVIRONMENT, IN A THEORETICALLY FORMULATED MARKETING CONTEXT

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INTRODUCTION

The purpose of this study was to analyze and evaluate the degree of congruence between the perceptions of administrators to those of adult evening students, in a theoretically formulated marketing context. Specifically, the study compared the differences in perceptions of those in administrative role positions to those of adult evening credit course students with respect to the attitudes of adult evening credit course students toward programs, services, and aspects of the environment in community colleges affiliated with the State University of New York. Some of the questions addressed in this study were: (1) What do adult evening credit course students perceive as the major reasons why they enrolled in the community college? (2) What do administrators perceive as the major reasons why adult evening credit course students enrolled in the community college? (3) To what degree are adult evening credit course students satisfied with programs and services offered, and aspects of a community college environment? (4) What degree of satisfaction do community college administrators feel adult evening credit course students have with programs and services offered, and aspects of a community college environment?

BACKGROUND OF THE STUDY

Administrators in community colleges should acknowledge the fact that the numbers of adult students are continually increasing. Adult students twenty-two years of age or older presently comprise over fifty percent of the total enrollment of the community colleges affiliated with the State University of New York (Central Administration Office of Institutional Research 1988). In addition, in 1987, part-time credit course student enrollments in community colleges affiliated with the State University of New York exceeded full-time enrollments by approximately nine percent (p. 105). Over seventy percent of the part-time students in these institutions are twenty-two years of age or older (Central Administration Office of Institutional Research, 1988). Such figures reveal the magnitude of adult part-time students presently enrolled in community colleges. Thiel (1984) states that "the influx of the adult learner raises the question as to whether or not institutions are aware of the needs of the adult population seeking higher education opportunities and whether or not the programs and services as presently designed and delivered are appropriate to the clientele" (p. 4).

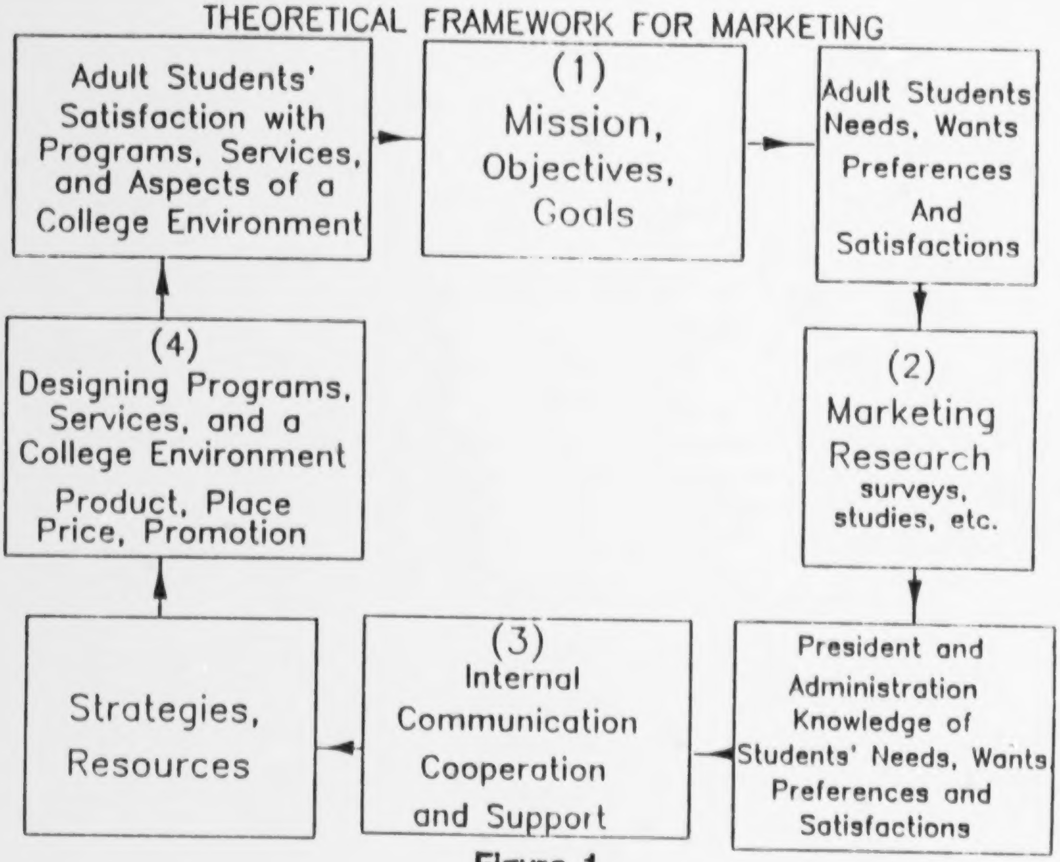
Evidence suggests that perceptions about an institution influence an individual's decision to enroll in a particular college. The decision to attend a particular college is affected by a decision to spend this time in a pleasant and rewarding environment and to seek programs and services that will lead to career and social success (Grabowski 1981). Students seek out programs, services and other aspects of a college environment that they believe will provide them satisfaction (Appel 1986). Thus, the focus of any institutional activity should be on an underlying orientation toward students, and on the benefits and satisfactions delivered by programs, services, and aspects of a college environment (p. 12). Any type of institutional activity, such as admissions, counseling, advising, developing academic programs, or maintaining the quality of student life will have an effect on the persistence of students (Tinto 1987). "An institution's capacity to retain students is directly related to its ability to reach out and make contact with students and integrate them into the social and intellectual fabric of institutional life" (p.180). It is important, therefore, for a community college to assess the attitudes of adult students toward programs, services and aspects of the college environment.

Marketing is a process that uncovers specific needs, satisfies those needs through the development of goods and services, informs people of their availability, and offers them at appropriate prices, and places (Krachenberg 1972). Litten (1980) emphasizes that successful marketing has the capability of serving students, institutions, and society through the implementation of educational programs that reach and satisfy students while at the same time achieve institutional and social objectives. An effective marketing approach will research and understand the needs of the customer, design a valued offering to meet those needs, communicate the offering effectively, and present it at the right time and place (Kotler and Fox 1985).

THEORETICAL FRAMEWORK FOR MARKETING

This framework helps identify the key elements of the marketing concept. This concept must be accepted both as an overall organizational philosophy for the community college, as well as a functional tool to be used by the college (Appel 1986). The following framework (Figure 1) has been adopted from Appel's (1986) framework of the marketing function in a higher education institution (p. 17). It highlights and explains the important elements of a marketing program for community colleges in the process of marketing to adult students.

The first step in any higher education institution's marketing effort should be deciding on its mission, goals and objectives, and environmental


THEORETICAL FRAMEWORK FOR MARKETING

Adult Students' Satisfaction with Programs, Services, and Aspects of a College Environment
(1) Mission, Objectives, Goals
Adult Students Needs, Wants Preferences And Satisfactions
(4) Designing Programs, Services, and a College Environment
Product, Place Price, Promotion
(2) Marketing Research surveys, studies, etc.
Strategies, Resources
(3) Internal Communication Cooperation and Support
President and Administration Knowledge of Students' Needs, Wants Preferences and Satisfactions

Figure 1

restrictions (Draves 1983). A community college must define its mission, philosophy, and goals before arriving at a marketing position. The mission and goal statements must be clear and communicated to everyone in the institution.

The second step in the marketing effort is to know the needs, wants, and interests of adult students. Beder (1986) asserts that market research is crucial to knowing the learner - his or her needs, interests, and desires that are likely to be incurred through participation. He also mentions that through market research institutional personnel can understand the things that compete for the learners' participation (p. 6). Appel (1986) states that before a community college can develop appropriate programs and services, it needs to assess how the programs and services are perceived by adult students.

Market research in the form of consumer analysis must be undertaken by a community college (Beder 1986). There are several measures available for conducting market research in the form of consumer analysis in community colleges. A major method for collecting student data is through the use of a survey questionnaire. Surveys are not only useful in helping decide on the target market (adult evening credit course students), but also in identifying adult students' needs, attitudes, opinions, and preferences (Berkeley 1986).

The third step in the framework identifies the need for the cooperation, communication, and support of administrators and the rest of the college community in an effort to be involved in a successful marketing program. The internal organization of a community college must know, understand and be committed to the needs and wants of adult students (Grabowski 1981). Effective marketing, in its broadest sense, is a "wholistic" process that involves everyone in the institution (Grossman 1987). In doing so, a competitive position can be developed through coordination and cooperation of internal decision making (Brooker and Noble 1985). By collecting and sharing adult students' perceptions, and by structuring the organization to assure leadership and coordination of objectives and operations, administrators will know the target market, and their role in the process of marketing to adult evening credit course students (Muston 1985).

The fourth step in the marketing program and at the heart of the marketing process are the marketing program elements of product, place, and promotion (Vaccaro 1979). Appel (1986) explains that developing the right "marketing mix" for a community college means developing the right programs and services to meet adult students needs, wants, and preferences. Then, as he explains, the exchange is completed by getting the programs and services to the right place, at a price affordable to adult students (in time and money), while promoting the programs and services to help facilitate the exchange.

METHOD

Nineteen community colleges affiliated with the State University of New York who participated in the State University of New York Central Administration-sponsored Spring 1988 administration of the American College Testing service (ACT) Student Opinion Survey, participated in this study. The respondents in this study were administrators and adult evening credit course students at the participating community colleges. Adult evening credit course students were defined as students 22 years old or older who were enrolled in courses for credit in the evening. Approximately 1600 adult evening credit course students responded to the Student Opinion Survey in the participating community colleges. Approximately 700 questionnaires were collected from administrators at the nineteen community colleges, and coded according to a taxonomy developed by the researcher. The classification scheme was organized into the following taxonomy: Role Position 1 - President; Role Position 2 - VP's, Deans, Directors, or Managers of Student Affairs or Community Services/Relations; Role Position 3 - VP's, Deans, Directors, or Managers of Administrative Affairs or Academic Affairs; Role Position 4 - Associates, Assistants, Coordinators, or Counselors of Student Affairs or Community Services/Relations; Role Position 5 - Associates, Assistants, Coordinators, or Counselors of Administrative Affairs or Academic Affairs; and Role Position 6 - Department Chairperson or Head of Department.

The responses from administrators were compared with those from adult evening credit course students. The items in the questionnaire designed for administrators were parallel to the items in the ACT questionnaire designed for students. The items pertaining to the reasons why adult evening credit course students enrolled in the college were coded as: 1 - "Major Reason"; 2 - "Minor Reason"; and 3 - "Not A Reason". The items pertaining to a level of student satisfaction with programs, services and aspects of the college environment were coded as: 1 - "Very Satisfied"; 2 - "Satisfied"; 3 - "Neutral"; 4 - "Dissatisfied"; and 5 - "Very Dissatisfied".

RESULTS

The data in Table 1 serves to answer the two questions regarding administrators and students perceptions as to the major reasons why adult evening credit course students enrolled in the college. A chi-square test of association was calculated for each item and it was used to determine whether there were significant differences in the pattern (or frequency) of response between administrators and students. It is evident from the chi-square test that the responses of the administrators and students were significantly different on six items. However, it is noteworthy to mention that there were only two items (good chance of personal success and good vocational or academic reputation) in which the majority of students responded differently than the majority of administrators.

TABLE 1
COMPARISON OF ADMINISTRATOR AND STUDENT RESPONSES TO THE MAJOR REASONS WHY ADULT EVENING CREDIT COURSE STUDENTS ENROLLED IN THE COLLEGE

ITEMS	Administrator Response				Student Responses				Chi-Square
	Major Reason		Not A Major Reason		Major Reason		Not A Major Reason		
	f	%	f	%	f	%	f	%	*p<.01
1. Convenient Location	495	78.7	134	21.3	1071	71.7	422	28.3	.001 *
2. Offered the Courses Students Wanted	573	90.8	58	9.2	1056	72.4	403	27.6	.000 *
3. Low Cost of Attending	540	85.4	92	14.6	842	58.3	601	41.7	.000 *

TABLE 1 (continued)

ITEMS	Administrator Responses				Student Responses				Chi-Square
	Major Reason		Not A Major Reason		Major Reason		Not A Major Reason		
	f	%	f	%	f	%	f	%	*p<.01
4. Could Work While Attending	578	91.6	53	8.4	1078	74.2	375	25.8	.000 *
5. Good Vocational or Academic Reputation	375	59.6	254	40.4	470	33.7	923	66.3	.000 *
6. Liked the Social Atmosphere	20	3.2	611	96.8	65	4.7	1331	95.3	.113
7. Liked the Size of the College	56	8.9	573	91.1	128	9.2	1269	90.8	.851
8. Good Chance of Personal Success	344	54.9	283	45.1	398	28.6	995	71.4	.000 *
9. Availability of Scholarship or Financial Aid	75	12.0	550	88.0	154	11.1	1237	88.9	.545

Table 2 serves to answer the two questions regarding administrators and students perceptions of the level of satisfaction adult evening credit course students have with programs, services, and aspects of the college environment. The table compares the mean scores of administrators to those of students to each item. An investigation of the mean scores for each item reveals a relatively high level of student satisfaction as indicated by both administrators and students. There are only five items which indicate a difference of 0.4 or greater between the mean scores of administrators to those of students. These items are: 1) Cafeteria/food services; 2) College-sponsored social activities; 3) Cultural programs and activities; 4) Study areas; and 5) Student community center/student union. For each of these items, as with most of the other items, students indicated a higher degree of student satisfaction than administrators. Generally, the mean scores appear to indicate a relatively small difference between students' and administrators' responses.

TABLE 2
ADMINISTRATOR AND STUDENT MEAN SCORES TO EACH ITEM

ITEMS	Admin. Mean Scores	Student Mean Scores
PROGRAMS AND SERVICES		
1. Academic advising/course planning service	2.5	2.3
2. Personal counseling services	2.5	2.4
3. Vocational guidance/career planning service	2.5	2.3
4. Financial aid services	2.4	2.2
5. Library/learning resources center facilities and services	1.8	1.7
6. College-sponsored tutorial services	2.6	2.4
7. Cafeteria/food services	2.9	2.4
8. College-sponsored social activities	3.0	2.3
9. Cultural programs and activities	2.8	2.1
10. College orientation program	2.8	2.5
11. Credit by examination program	2.6	2.6
12. Parking facilities and services	2.6	2.5
13. Veterans services	2.3	2.4
ASPECTS OF A COLLEGE ENVIRONMENT		
1. Quality of instruction	1.5	1.8
2. Variety of courses offered at this 2-year college	1.8	2.0
3. Class size relative to the type of course	1.7	1.8
4. Flexibility to design students program of study	2.3	2.1
5. Challenge offered by students program of study	1.9	1.9
6. Preparation students are receiving for their chosen occupation	1.8	2.1
7. General admissions/entry procedures	2.2	2.2
8. Accuracy of college information students receive before enrolling	2.2	2.1
9. Availability of financial aid information prior to enrolling	2.4	2.5
10. Assistance provided by the college staff when students entered this college	2.2	2.2
11. College catalogue/admissions publications	2.1	2.0
12. Student voice in college policies	3.0	2.7
13. Personal security/safety at this college	2.3	2.2
14. Classroom facilities	2.3	2.2
15. Study areas	2.7	2.2

TABLE 2 (continued)

ITEMS	Admin. Mean Scores	Student Mean Scores
16. Student community center/student union	2.9	2.5
17. College bookstore	2.5	2.3
18. General condition and appearance of the buildings and grounds	2.2	2.0
19. General registration procedures	2.4	2.2
20. Availability of courses students want at times they can take them	2.5	2.4
21. Billing and fee payment procedures	2.3	2.2
22. Overall concern for adult evening students as individuals	2.5	2.4
23. Attitude of the college nonteaching staff towards students	2.2	2.3
24. Opportunities for personal involvement in college activities	2.9	2.6
25. This college in general	1.8	1.9

A one-way analysis of variance (ANOVA) was utilized to test for the significance of the difference between the mean scores of student role position to each of the administrator role positions. Table 3 indicates that with the exception of administrator role position 1 (presidents), the mean scores are significantly different between administrator role positions and students. Missing from this table, however, are the data revealing the fact that the mean scores for the different administrator role positions are not significantly different from each other.

TABLE 3
COMPARISON OF THE MEAN SCORES OF STUDENTS TO THOSE OF ADMINISTRATIVE ROLE POSITIONS TO THE DEGREE OF SATISFACTION ADULT EVENING CREDIT COURSE STUDENTS HAVE WITH THE PROGRAMS AND SERVICES OFFERED AND WITH ASPECTS OF THE COLLEGE ENVIRONMENT

ROLE COMPARISON		LOWER CONFIDENCE LIMIT	DIFFERENCE BETWEEN MEANS	UPPER CONFIDENCE LIMIT
Students	Admin. Role 1	-0.3823	-0.0396	0.3032
Students	Admin. Role 2	-0.3279	-0.1927	-0.0575 ***
Students	Admin. Role 3	-0.3316	-0.1866	-0.0417 ***
Students	Admin. Role 4	-0.2963	-0.1594	-0.0225 ***
Students	Admin. Role 5	-0.3919	-0.2258	-0.0597 ***
Students	Admin. Role 6	-0.3272	-0.2233	-0.1194 ***

*** Comparisons significant at the .05 level of significance

DISCUSSION

The results appear to indicate a relatively high degree of effectiveness that community colleges have achieved in marketing to this clientele. The relatively high levels of satisfaction indicated by students suggest that the community colleges have focused on the mission to serve the adult evening student, and have pursued adult evening credit course students through appropriate programs, services, and aspects of a college environment. In general, the mean scores of students and administrators are relatively congruent, and appear to indicate that a certain degree of marketing research has been undertaken in order to understand and gain knowledge of this market.

It does not appear, however, that the information obtained from this clientele has been widely disseminated and communicated throughout the college communities. The data in Table 2 suggest that many administrators in these community colleges lack some information regarding the major reasons why adult evening students enrolled in the college. The data in Table 3 appear to indicate that presidents have a better knowledge of adult evening credit course students' attitudes than other administrators. The data reveal that while administrator role positions 2, 3, 4, 5, and 6 differ from students, they are not significantly different from each other. This information further indicates that these administrators lack some information regarding the attitudes of adult evening students. The Theoretical Framework for Marketing suggests that information concerning adult students' attitudes toward all programs, services, and aspects of the environment should be shared with each and every administrator. Therefore, based on the results in this study, it is this aspect of the Theoretical Framework for Marketing that community colleges should improve upon in the quest to involve the "whole" community college in the marketing effort.

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THE USE OF CENSUS DATA TO IDENTIFY NEW STUDENT MARKETS

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INTRODUCTION

A recent article in the Chronicle of Higher Education (August 10, 1988) confirms the observation that is is possible to say almost anything about college enrollment and be correct. Quoting a recent study by the American Council on Education, Campus Trends, the Chronicle reported that the forecasts of enrollment crises have not only been incorrect, but that "enrollments at the majority of American colleges and universities have been on the rise since 1980..." (p. 1). This increase, the article suggests, is explained by higher participation rates among both traditional and older students. We soon learn, however, that the experiences of more than a few colleges and universities corroborate the predictions of decline which we have heard for the last decade. "At least four in ten institutions have had net decreases in enrollment since 1980... Among independent institutions, 47% reported decreases," with 28% experiencing "...losses of 10% or more" (p.15). This paper explores one attempt by a small, private college to compensate for these kinds of losses by uncovering new markets using census data.

Neumann College is a four year Catholic, liberal arts college located in suburban Philadelphia. Competition for students is escalated by at least three factors: (1) within the Philadelphia region there are approximately 65 institutions of higher learning; (2) Neumann is a commuter college; and (3) the demographic indicators within the college's recruiting area point to either stability or decline. For example, the number of high school graduates in the tri-state area has declined since 1980 and is projected to continue. By 1990, the decennial decline will be 27.2% in Pennsylvania, 15.2% in New Jersey, and 35.2% in Delaware (WICHE, 1988). More specifically, Delaware County -- Neumann's home county and the source of a majority of its students -- shows similarly threatening school population figures: between 1970-1980 there was a 40% decline in the 5-14 year cohort (Delaware County, 1983); from 1980-1990, public school enrollment in Delaware County will have declined by 25% (PA Economy League, 1982). Barring sudden and unexpected in-migration, these trends are expected to continue up to the mid-90s.

It was within this demographic context that Neumann's President decided in 1985 to explore establishing an off-campus site in South Philadelphia, to be known as Neumann College South (NCS). South Philadelphia was chosen for two reasons: (1) it is a heavily populated section of Philadelphia (pop. 180,000) without a college or university within its boundaries; (2) the sponsoring body of Neumann College, the Sisters of St. Francis, owns St. Agnes hospital in South Philadelphia, a well-known, accessible facility with an excellent but underutilized education building.

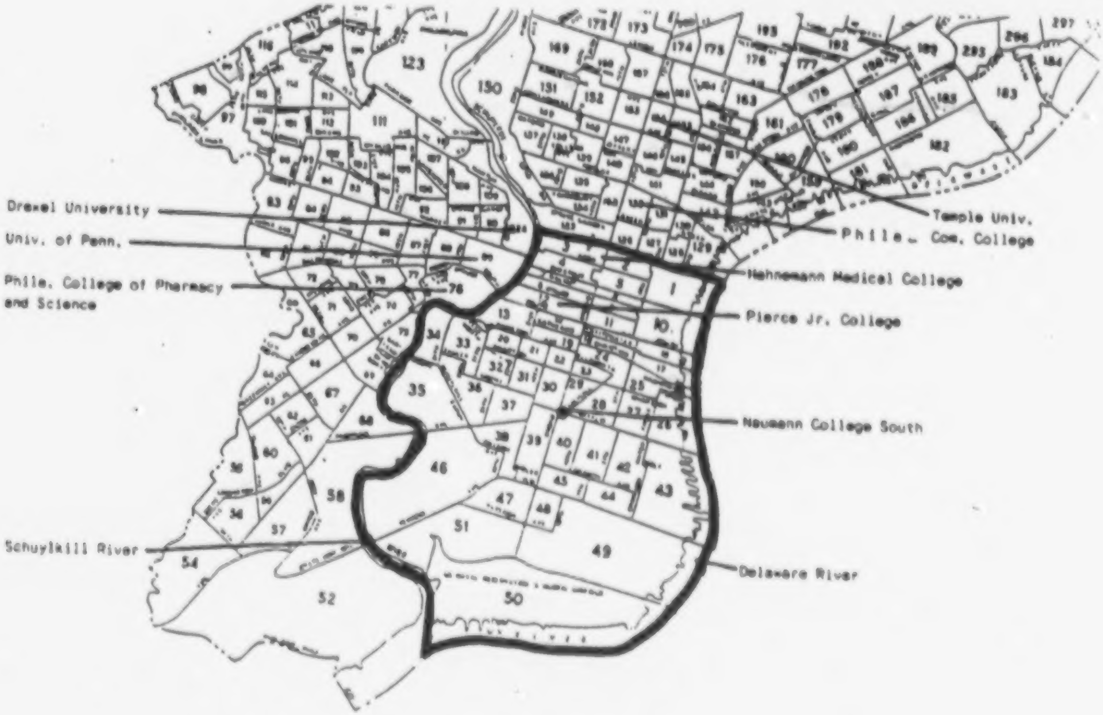
To determine the feasibility of establishing such a site, the President commissioned a major public accounting firm. The feasibility study concluded that while there was "...sufficient existing and potential market demand..." (Pannell et al., p. II-1) to support the proposed site, the projected level of enrollment could not support the financial viability of the project. Unfortunately, the study addressed demand in only the most general terms, speaking encouragingly of "latent demand," meaning individuals who might at some time desire some amount of higher education. This concept of demand, we felt, might be helpful to the water company, but for us, it offered little direction. Furthermore, the study did not identify where the greatest potential demand for higher education existed within this large urban area.

Determined to test the South Philadelphia market possibilities, the President went ahead with the experiment and Neumann College began offering courses in South Philadelphia during the summer of 1986. After three semesters of marginal success with the operation, the college planning committee advised the President that in order to build a viable program in South Philadelphia, one with clear educational goals and enrollment objectives, more precise information about demand was needed. The President then instructed the Office of Research and Planning to do a demographic analysis of South Philadelphia to refine our understanding of market demand and to assist decision making about where resources could be used most effectively to promote the site.

METHOD

This study employed geo-demographic analysis, a method used to describe the characteristics of populations within specified geographic boundaries (i.e., census tracts). Figure 1 is a census tract map of the area we scanned, commonly known as South Philadelphia:

Figure 1. Census Tract Map of South Philadelphia


Drexel University
Univ. of Penn.
Phila. College of Pharmacy and Science
Schuylkill River
Temple Univ.
Phila. Com. College
Hahnemann Medical College
Pierce Jr. College
Neumann College South
Delaware River

The area is comprised of 50 census tracts (Tracts 1-50). Three "water" tracts (26, 43, 49), located along the Delaware River and unpopulated, were not included in our analysis.

Census tract statistics were derived primarily from two 1980 U.S. Census reports, one on population and housing characteristics and another on characteristics of income. Both reports were obtained from the Delaware Valley Regional Planning Commission, Regional Information Services located in Philadelphia. Data on relevant variables (e.g., numbers of persons, race, age, sex, education, income, etc.) were extracted from these two reports and entered into a spreadsheet format using Lotus 1-2-3. Rows of the spreadsheet contained the variables and columns represented the census tracts. The resultant spreadsheet, a matrix of 124 rows and 50 columns, was used to generate tabular and graphical summaries for the target area as a whole (all 47 tracts), for selected groups of census tracts, and for individual tracts.

ANALYSIS

Our analysis of the census data was carried out in a series of steps leading to the identification of a small number of tracts that were judged to have high market potential. The analysis also helped to shape plans for further marketing studies on the educational needs among selective population sub-groups living within those tracts. The following discussion briefly describes each of these steps.

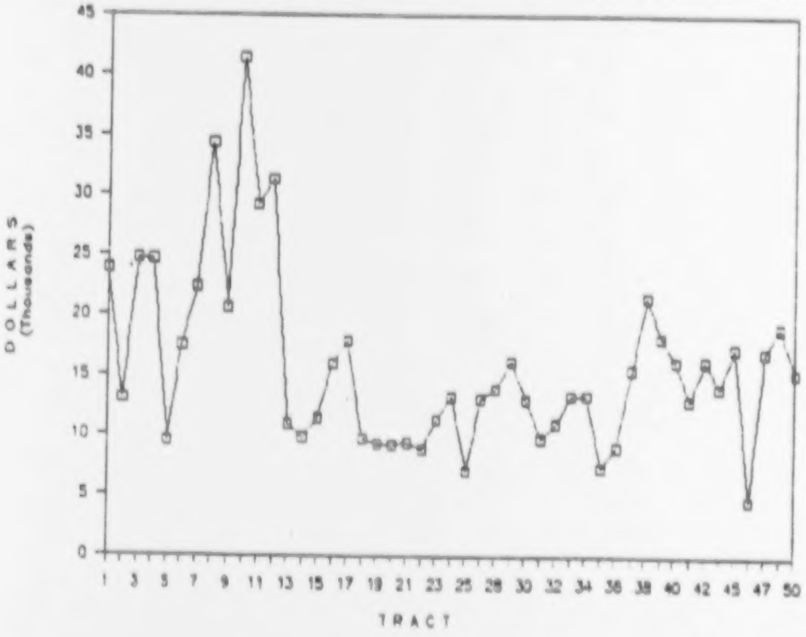
Step 1 - Aggregate Profile

The first step in our analysis produced a demographic profile of the entire target area (i.e. all 47 census tracts). The aggregate picture was in stark contrast to the general demography of the suburban area surrounding the main college campus. It was evident even at this initial stage in the analysis that this new environment would not necessarily support the college's proposed venture without significant modifications or additions to existing programs and services. Particularly revealing about this population were its relatively low levels of educational attainment and family income. Nearly half of the population had not completed high school; only 10 percent completed 1-3 years of college, and 15 percent had attended college four or more years. More recent estimates (1987) derived from a marketing study conducted for a major Philadelphia area newspaper put college attendance at 12% for South Philadelphia (ABC, 1987). With respect to income level, about 18 percent of families and 27 percent of non-families were living below poverty level. While the aggregate profile provided a useful demographic description of the target area, it was not a sufficient basis for planning a focused marketing effort.

Step 2 - Cluster Profile

Step 2 sub-divided the target area into clusters of tracts. Each cluster, consisting of a relatively homogeneous set of geographically adjacent tracts, was identified by means of inspecting line graphs like the one shown for median family income in Figure 2:

Figure 2. Median Family Income by Census Tract



While Figure 2 shows significant variation in family income across tracts, roughly four distinct clusters are apparent: Tracts 1-12 (middle to high income); Tracts 13-22 (mostly low income); Tracts 23-36 (low to middle income); and Tracts 37-50 (middle income). Profiles similar to Figure 2 were also developed separately for educational attainment, age, race, and size of population. When these profiles were compared, common geo-demographic patterns began to emerge from which it was possible to construct five socio-economic zones or clusters of tracts. These SES zones are described in Table 1:

Table 1. Five SES Census Tract Clusters

Cluster	Tracts	Pop. (%)	Avg. Median Fam. Income	Avg. % Some College	Avg. % White Race	Pop. Age 5-24 (% Pop.)
I	1-12	43,552 (19)	$25,000	64	84	8,700 (20)
II	13-17	15,119 (7)	$13,000	32	42	3,961 (26)
III	18-22	15,170 (7)	$ 9,000	11	13	4,608 (30)
IV	23-36	73,201 (32)	$12,000	13	47	23,253 (32)
V	37-50	83,252 (36)	$16,000	13	83	26,162 (31)

Cluster I and Cluster III represent the extremes of family income and education within South Philadelphia. Cluster I appears to have a younger, highly affluent population, whereas Cluster III contains large numbers of economically and educationally disadvantaged persons. Neither cluster seems to fit realistically with our institution's traditional student profile or service capability. In short, these two clusters were deemed less congruent with our existing college mission or enrollment policies. In contrast, Clusters II, IV, and V, with income and education characteristics more similar to our market profile, suggested places for potential student recruitment. In general, Step 2 was useful in eliminating large geographic areas with low marketability and in identifying areas with potentially high marketability.

Step 3 - Identification of Primary Tracts

The overriding problem, we realized, was generic to strategic planning: how to define the right "fit" between the institution and its environment. Our reasoning was that tracts having "good" fit would be more marketable theoretically --- that is, yield higher college enrollments -- than tracts with "bad" fit. To determine the degree of such fit or marketability of a given tract with our institution, a rating system based on institutional marketing guidelines was developed.

Each tract was rated using a five-point scale ranging from Very Good (5 points) to Very Poor (1 point) on each of three variables: Median family income, educational attainment (number of years of college attendance), and age (numbers of persons of college age). These variables were chosen because previous research studies have shown that income and education are important factors in understanding college access and college choice. In brief, higher ratings were assigned to tracts with "average" income, mid-to-high levels of college education, and with relatively large numbers of persons of college age. Tracts which did not meet these criteria received lower ratings. A total score for each tract was then obtained by simply adding the ratings on each of the variables. This score was used to construct a distribution of ranks. The highest ranked tracts, 37, 39, 40, and 42, all of which fall into Cluster V (see Table 1), were selected for further study.

Step 4 - Micro-Analysis of Tracts

Step 4 involved a combination of on-site observation and use of census tract statistics obtained from the 1988 Cole Publication for Philadelphia County to describe further the economic, physical, cultural and demographic characteristics of the streets and neighborhoods within these four prime tracts.

With notepads in hand, we drove through at least two of the four primary tracts and made notes on the physical appearance of the neighborhood, type of housing, age and ethnicity of the population, on income indicators (e.g., types of cars), and other special points of interest (e.g., churches, community centers, businesses, etc.). These observations gave us a good "feel" for the tract environment as a whole, and for the diverse sub-environments which exist within the tracts. Our synthesis of observation notes and census tract data have now prepared us to undertake more meaningful marketing studies of the educational needs and interests of specific communities within South Philadelphia.

Step 5 - Preparation of Needs Analysis Survey

The Cole Directory mentioned above provides information by census tract. Telephone numbers can be found for individuals who live within specific blocks of a given census tract. Using this information, our plan is to conduct a limited telephone marketing survey of households, followed by focus group interviews designed to ascertain community educational interests and needs within the targeted areas.

CONCLUSION

The objective of this geo-demographic analysis, then, is yet to be realized fully: to provide empirical marketing information which will help make the decision to open a site in South Philadelphia become the right one. While the modest increases in enrollment at the site seem to auger well, it is too soon to know if this research will lead to the kinds of decisions which will produce success.

Even at this stage, however, we believe that the project has yielded several benefits. First, the heterogeneous population in South Philadelphia has caused us to examine our mission operationally and philosophically. Simply, programs and structures which are efficacious at the predominantly white, middle class suburban campus find a less comfortable home in the environment we have described. As we look for new markets, to what extent can we, should we change?

The second benefit is related to the first. The population characteristics derived from the study led Neumann to offer GED classes at the South Philadelphia site, something we had never done at the main campus. There are about 50 students enrolled in these classes during the current semester, and we believe many of these students will continue with college-level classes.

Third, the target tracts identified in our analysis are the basis for changing our public relations, recruiting, and advertising strategies in South Philadelphia. Until now, blanket approaches have been employed, using print and cable television media. While we will not abandon newspapers, subway placards, and commercials on CNN, we now have the ability to mount an information-based targeted mail campaign.

Finally, this study demonstrates that even at a small, liberal arts college, IR can contribute to understanding the populations we now serve and those we seek to serve. Anecdotal evidence about expensive yet inadequate market audits conducted by outsiders need not become part of the mythology of every institution. Surely, we should not inflate our claim: resources are limited and the research agenda is full. But as the kind of need for marketing information we have been describing grows within our institutions, it seems reasonable to conclude that IR offices are the place to begin.

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A Model Program to Assess a College's Impact by Census Tract

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Introduction

In order to properly identify the impact of a college or university on the communities served by that institution, it is necessary to totally understand the demographics of those communities. Most colleges maintain a system for identifying the demographics of its student population. However, few, if any, colleges are aware of the relationship between its demographics and those of the communities they serve.

One of the most powerful ways to determine the demographics of a college's community is through the use of census tracts. This is especially true for community colleges where the community is usually defined by the boundaries of the county. For example, Monmouth County is composed of 53 distinct boroughs, townships and cities. However, the total number of census tracts is 124. For each of these census tracts, the following demographic information is available:

Twelve profiles from STF 3 (1980 Census)

1. Total population, race, sex by age, race by sex by age, marital status, and children ever born
2. Persons in household, household relationship, group quarters, and family type by presence of children
3. Language spoken, ancestry, nativity, place of residence in 1975, veterans status, and disability

4. Labor force status by race & sex & by presence of children, occupation, industry, & class of worker
5. Place of work, journey to work, automobile availability, employment in 1979
6. School enrollment and years of school completed
7. Household, family, and per capita income in 1979
8. Poverty status of families and persons in 1979
9. Housing units, occupancy status, units in structure, and year structure built
10. Bedrooms, bathrooms, kitchen facilities, heating equipment and fuel, and telephone availability
11 Gross rent and monthly owner housing costs
12. Mean value of housing, heating equipment by year structure built, and plumbing characteristics

This same information is also available for the county as a whole. Therefore, it is possible to determine the relationship of each of the demographic characteristics in each of the census tracts to the mean of those characteristics in the county.

It is important to point out at this point that most colleges seem to rely more heavily on zip code data. Unfortunately, the information listed above is not available for zip codes. In addition, zip codes tend often to transcend city or town borders so that the demographic mix is much more heterogeneous than in census tracts.

Since a census is defined by distinct boundaries, it is possible to determine the streets and addresses contained within the tract. Furthermore, since Brookdale's student data base contains the street address for each student, it is then possible to determine the number and percentage of students who attended this college from each of the census tracts. Once able to accomplish this task, the College would also have the capacity to compare other demographic data with that available for the census tract. Therefore, the objectives for the project were as follows:

1. To identify the exact street addresses for every census tract in Monmouth County.
2. To develop a computer program that would match all students who have attended Brookdale since 1980 with the appropriate census tracts.
3. To determine the impact of Brookdale in each census tract by comparing the unduplicated headcount with the population of the census tract.
4. To compare Brookdale's demographics with the demographics of each census tract in the following areas: age, sex, and ethnic status.
5. To determine the means and standard deviations for each of the following census tract characteristics by percentage and number: sex, white population, black population, Asian/Pacific Islander population, Puerto Rican population, Hispanic other than Puerto Rican population, American Indian population, English proficiency, unemployment level, highest

education level, family income, and income below the poverty level.

6. For census tracts that fall one standard deviation or more above or below the mean for the county, to determine Brookdale's impact and to compare them with the data for the county as a whole.
7. To publish a report that summarizes the data, highlights areas of impact, and recommends plans of action.

Procedures

Since census tracts are defined by physical boundaries, such as streets, it is possible to determine the census tracts for most Brookdale students through the use of their street addresses. However, there are a number of streets that traverse more than one census tract. Originally, it was expected that it would be necessary to have one individual travel through the county delineating the street address boundaries for each of these tracts. However, it was later discovered that some commercial firms specialized in this matching process. One of these firms, Urban Data Processing of Billerica Massachusetts, appeared to have the most capabilities and was thus granted a contract to provide census tract numbers for all Brookdale students from January, 1980 through the July 1987. The principals had been involved with the Census Bureau when it developed its program in the early 1980's; however, this program was not supported. When a member of the project staff contacted the Census Bureau, he was informed that the programs still available were not guaranteed to provided accurate address matches. Conversely, Urban Data Processing did guarantee a match of 80 percent or greater.

The complexity of address matching is obvious. As with most colleges, Brookdale inputs most data base information by hand. Therefore, it is not uncommon to have the same streets or municipalities spelled in numerous different ways. For example, the town of Atlantic Highlands could be spelled A. Highlands, Atl. Highlands, Atlntc Hglnds and so forth. Therefore, to create an acceptable match, it would be highly recommended that other institutions also contract with firms that can perform this task accurately at a reasonable cost.

The result was that Urban Data Processing was able to match 86.94 percent of the 70,113 records that were able to be processed. Originally, 73,178 records were submitted: however, 3065 were rejected due to the fact that post office boxes or rural route delivery codes were used. A total of 9150 processed records could not be matched to census tracts.

The total cost for this matching service was $4.50 per thousand records processed up to 1,000,000 records. As the number of records processed increases, the cost per thousand decreases. The minimum charge is $750 which would allow for the processing of 167,000 records.

After the computer tape was received from the contractor, the Brookdale Computer Services Center added the other demographic data specified including age at time of entry, gender, and ethnic status.

Age had to be computed by comparing the first day of the first term of entry with the breasted as supplied by the student.

The STF 3 profiles for each census tract were obtained from the Monmouth County Planning Board. A Lotus 1-2-3 spreadsheet was then developed that included all the information by the proposal. By way of formulas available in Lotus, it was then possible to compute means, standard deviations, and the appropriate ranges for further investigation. Student demographics by census tract were added to the spreadsheet as soon as they were made available.

One major obstacle in this study resulted from the fact that the STF 3 profile data sometimes included the same census tract more than once with different data each time. When the United States Census Bureau was contacted, it was learned that in some cases rather than create a new census tract, the same census tract number would be used for an newly developed adjacent area to an existing census tract. For the purposes of this study, these census tracts were combined.

The findings discussed below focus on those census tracts that fall one or more standard deviation units above or below the means for the variables studied. It should be obvious that due to the magnitude of the elements studied, this represents only the beginning of Brookdale's study.

Findings

Impact Rates

Census tracts are small areas into which cities and their adjacent areas have been divided for statistical reasons. Tract boundaries are established cooperatively by a local committee and the United States Bureau of the Census. Tracts are designed to be relatively uniform with respect to population characteristics, economic status, and living conditions.

The average United States tract contains about 1,500 households. The average tract in Brookdale's service county contained 1,420 households in 1980. The range of households per tract in Monmouth County in 1980 was wide, from 62 to 4,100 households.

The mean number of residents in Brookdale's service county during 1980 was 4,193 per tract with a wide range of 242 to 11,965. Furthermore, the mean number of persons most likely to be utilizing a college in the years following a census (those aged fifteen years and over at the time of the census) was 3,248 per Monmouth County tract. The range of this population was from 126 to 8.840 persons per tract. It is this population which is used as a base to calculate Brookdale's 1980 - 87 impact rates when student's addresses are able to be matched to a census tract.

Table I is a frequency distribution of these impact rates into Monmouth County's 120 census tracts.

Upon inspection, it is clearly evident that the Brookdale impact rates into the tracts form neither a flat nor a steeply peaked nor an intensely skewed distribution indicating that the College is not serving all tracts equally nor is it serving only a relatively few tracts within Monmouth County intensively. While kurtosis of the distribution of impact rates is certainly not equal to zero, the distribution of rates appears to sufficiently resemble a Gaussian distribution to indicate that normally distributed tract characteristics affect Brookdale impact rates and that the use of standard deviation units to isolate, study, and describe extreme tracts seems not only warranted for purely descriptive analysis purposes but also warranted as a more objective method than isolation by simple ranking.

Population and Impact Rates

The mean impact or penetration rate into tracts is 14.8 percent with a range of 0.0 to 31.4 percent. Tracts at or above 21.3 percent in impact rate are one or more standard deviation units above the mean. Tracts at or below 8.4 percent in impact rate are one or more standard deviation units below the mean.

Twenty Monmouth County tracts fell more than one standard deviation unit below the mean along a distribution of tracts by total 1980 population. The identical twenty tracts also fell more than one standard deviation unit below the mean along a distribution of tracts by the total number of persons aged fifteen and over in 1980. Conversely, fifteen Monmouth County tracts fell more than one standard deviation unit above the mean. These same fifteen tracts also fell more than one standard deviation unit above the mean when the total number of persons aged fifteen and over was distributed. With the exception of two tracts, tracts above one standard deviation unit above the mean in total were the identical tracts identified as being similarly situated along a distribution of tracts by the total number of persons aged fifteen and over.

Tables II, III, and IV present those Monmouth County tracts which fell above plus one standard deviation unit from the mean in total number of blacks, Puerto Ricans and other Hispanics,respectively. Brookdale's impact rates into the adult population (aged fifteen or more in 1980) are also presented in these tables.

A review of the series of Tables II-IV clearly shows the differential dispersion of the minority population throughout Monmouth County. The black population is heavily concentrated geographically, the Puerto Rican population somewhat less, and the other Hispanic population is widely dispersed throughout the county. Fully 66 percent of the county's entire black population is concentrated in the fifteen tracts shown. Blacks comprise from 21 percent to 94 percent of the population in these tracts. Only 52 percent of the Puerto Rican population is concentrated in the 12 tracts shown and it comprises only 5 percent to 14 percent of the population in these tracts. It is difficult to find a significantly sized other Hispanic community -- only 48 percent of the county's other Hispanic entire population resides in the twenty-three tracts shown and other Hispanics account for only 1 percent to 6 percent of the population in these tracts. Minority outreach efforts, of course, are affected by this differential concentration/dispersion of minority groups in Monmouth County.

Inspection of the tracts having the largest black populations indicates that the fifteen tracts are located in only five municipalities. While large Puerto Rican populations are also found in four of-these same municipalities, only four of the twenty-seven tracts shown for blacks and Puerto Ricans are mutually shared by large populations of both groups. Only five of the twenty-three tracts shown for other Hispanics are heavily populated by a black and/or Puerto Rican population.

Due to the necessary brevity of this paper, it was not possible to include all the tables that were prepared. Needless to say, the information gained has proved to be highly beneficial to the College and will be used in our marketing and recruitment efforts. Further information can be obtained by writing directly to: Arnold J. Gelfman, Director of Planning & Special Projects, Brookdale Community College, Newman Springs Rd., Lincroft, NJ 07738.

TABLE I

Frequency Distribution of BCC 1980-87 Impact Rates into Sevice Area Census Tracts

Impact Rate (%)		Number of Tracts
0	xxxxx	5
1	x	1
2	x	1
3		0
4		0
5	xx	2
6	xx	2
7	x	1
8		0
9	xxxxxx	6
10	xxxxxxx	7
11	xxxxxxxxxxx	11
12	xxxxxxxxx	9
13	xxxxxxx	7
14	xxxxxxxx	8
15	xxxxxxx	7
16	xxxxx	5
17	xxxxxxxx	8
18	xxxxxxxx	8
19	xxxxx	5
20	xxx	3
21	xxxx	4
22	xxxxxxxx	8
23	x	1
24	xxxx	4
25		0
26	xx	2
27	x	1
28	xx	2
29	x	1
30		0
31	x	1
Total		120

TABLE II

Census Tracts Above +1 Standard Deviation Unit in Total Black Population and Associated Impact Rates into Adult Population (All Ethnic/ Racial Designations)

Tract #	Name	1980-Number of Blacks	Impact Rate (%)
76	Neptune Twp.	2889	9.1
34	Red Bank	2637	12.6
73	Asbury Park	2588	12.1
72	Asbury Park	2578	6.8
55	Long Branch	2105	14.0
56	Long Branch	1814	10.6
77	Neptune Twp.	1802	14.0
78	Neptune Twp.	1758	21.6
71	Asbury Park	1677	14.1
70	Asbury Park	1692	9.8
75	Neptune Twp.	1552	9.9
45	Tinton Falls	1335	23.6
108	Freehold Boro	1283	10.6
54	Long Branch	1175	16.6
79	Neptune Twp.	1145	31.4

TABLE III

Census Tracts Above +1 Standard Deviation Unit in Total Puerto Rican Population and Associated Brookdale Impact Rates into Adult Population (All Ethnic/Racial Designations)

Tract #	Name	1980-Number of Puerto Ricans	Impact Rate (%)
70	Asbury Park	495	9.8
58	Long Branch	442	12.8
59	Long Branch	429	12.7
56	Long Branch	421	10.6
54	Long Branch	349	16.6
112	Howell/Candlewood	273	8.9
57	Long Branch	248	13.7
110	Freehold Boro	236	11.7
82	Bradley Beach	231	13.2
20	Keyport	229	10.0
75	Neptune Twp.	227	9.9
19	Keyport	184	12.4

TABLE IV

Census Tracts Above +1 Standard Deviation Unit in Total Other Hispanic Population and Associated Brookdale Impact Rates into Adult Population (All Ethnic/Racial Designations)

Tract #	Name	1980-Number of Other Hispanics	Impact Rate (%)
97	Marlboro/Robertsville	162	26.7
36	Red Bank	161	14.9
72	Asbury Park	160	6.8
105	Freehold Twp.	151	17.4
7	Middletown	146	21.9
23	Hazlet	138	17.2
18	Union Beach	127	10.9
21	Hazlet	122	18.6
100	Manalapan/Gordon's C.	122	19.9
50	Eatontown	121	18.5
78	Neptune Twp.	119	21.6
24	Hazlet	118	21.3
33	Holmdel	114	29.3
34	Red Bank	114	12.6
17	Keansburg	113	9.0
117	Millstone	112	0.0
96	Robertsville	98	24.2
59	Long Branch	95	12.7
6	Middletown	95	13.8
55	Long Branch	93	11.7
49	Eatontown	91	21.9
113	Howell	91	11.8

The Role of Institutional Research In Maintaining Academic Standards During A Period of Declining Enrollments

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Introductions

There have been numerous studies, articles, and presentations during the 1980's concerning the impact of fluctuating demographic trends upon college and university enrollment patterns (Cope, 1985: Hearn and Heydinger, 1985). The focus of this research clearly indicates there has been a decline in the traditional college-age applicant pool (Taylor and Taylor, 1987). This has resulted in greater competition for students, particularly among and between various enrollment driven public institutions of higher education (Cope, 1985). This competition has fostered a movement toward institutional self-studies and strategic planning. These exercises have encouraged the revitalization of curriculums, promoted the development of new and relevant academic programs, and increased the delivery of student services (Doucette et al, 1985). Concurrently, an emphasis on enrollment management has evolved where quotas are set and pursued for each academic program. In order to meet these quotas, admission offices have expanded their efforts with greater utilization of marketing techniques to encourage applications from a diverse population pool (Alpert, 1985). Many of those efforts have proven successful for enrollment purposes. Yet, they have raised a number of philosophical and ethical questions particularly for open admission community colleges.

Fundamentally, community colleges were developed to meet the educational needs of a wide spectrum of constituency groups in a well defined geographical region (Cross, 1981). Nonetheless, their enrollments have been affected by the decline in the traditional college-age cohort and the competition from other post-secondary sectors (McCartan, 1983). In an attempt to justify their viability while lacking the appropriate services, some of these institutions have pursued a population which either lacks the essential academic preparation, capabilities and or emotional maturity to pursue a post-secondary degree. Due to these limitations, this population will either have a high attrition rate or will force the institution to lower its standards in order to retain them. Ultimately, this will have a negative impact on the institutions ability to attract qualified students from its service region.

Pursuant to the aforementioned scenario, several issues need to be carefully addressed. First, what are the institutional ethics of an open door philosophy which solicits unqualified students without appropriate services to insure they acquire minimal academic skills? Second, what criteria are being utilized to review the integrity of academic standards which perpetuate the advancement of these students within the institution?

While it is not the function of the institutional research office to establish or maintain admission policies or academic standards, it can have a substantial impact upon their integrity by properly presenting relevant data to evaluate their outcomes. Hence, the purpose of this paper is to describe the strategy employed by an institutional research office to examine the outcomes of the open door philosophy and academic standards of a small, rural community college during a period of declining enrollment.

Background

The community college in this study is located in a geographically rural and remote (yet growing area) of upstate New York. Approximately 76% of the students come from a 3500 square mile, two county service region.

The major industries in the area, in addition to, tourist related functions are state and federal correctional facilities, the Olympic Regional Development Authority and related state, county and local government jobs.

The college has one main campus, three branch campuses, and several extension centers. There are approximately 50 full time faculty with 100 to 150 adjuncts teaching between 425 and 500 courses during the respective Fall and Spring semesters. In keeping with its mission statement, the college has an open door admission policy (with the exception of certain majors) which nominally requires evidence of a High School diploma.

The college operating budget is developed from county contributions, tuition revenues, and state FTE's. Thus, 2/3 of the budget are derived from enrollment driven sources. In order to maintain the integrity of the budget, tuition charges have been increased to just below the state maximum level. By restricting individual budget center allocations and maintaining large reserves during the academic year, the institution has built a satisfactory fund balance.

Since the 1984-85 academic year, there has been a 16% decrease in credit hour generated FTE's accompanied by a 17% decrease in duplicate head counts. The latter is partially due to lower service area high school graduating classes (which are expected to increase), restricted course offerings (leading to larger class sizes and limited selection) and outdated majors (which are being upgraded).

While an empirical study has yet to be conducted regarding the college's academic reputation in the region, subjective feedback indicates the institution is viewed more as an extension of secondary school than a college. This may account for the relatively large 88% of highly qualified regional high school students who enroll in the institution's early admissions program but eventually matriculate elsewhere after their high school graduation. Although not conclusive, internal data can be utilized to substantiate the low perception by examining the 48% overall attrition rate of the college's entering freshman class, of which 53% request transcripts be sent to another post-secondary institution in the state.

Procedures/Data Analysis

The impetus for this preliminary study resulted from a longitudinal analysis of select academic mean characteristics for entering first-time students (see Table 1). The data indicated student mean SAT verbal and math scores consistently ranged between 59 and 67 points lower in comparison with New York State high school graduates during the same period. Yet, the mean high school GPA and percent in high school graduating class rank indicated the entering freshmen were basically average high school students. In essence, the mean freshmen high school GPA was in the equivalent of the C letter range while the mean rank in class averaged in the middle quadrant.

TABLE 1

Select Mean Academic Characteristics of NCCC First Time Students

Fall Semester

Year	SAT V	SAT M	HS GPA	HS Class % Rank
1987	366	406	76	56
1986	366	404	76	53
1985	359	414	74	54
1984	347	393	73	52

Having analyzed the preceding data, questions began to arise concerning the academic viability of those students in their chosen program of study. Due to sorting limitations regarding that cohorts GPA's at the end of their first semester, cumulative GPA's for the entire matriculated population were generated for analysis. Table 2 provides a

TABLE 2

Mean Cumulative GPA Total Students by Major
Fall Semester

		1984	1985	1986	1987	1988
		$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$
General Studies	AA	2.31	2.47	2.62	2.49	
Humanities	AA	2.66	2.69	2.73	2.93	
Social Science	AA	2.87	2.94	3.07	2.98	
Math/Science	AS	2.37	2.61	2.81	2.76	
Physical Education	AS	2.08	2.39	2.06	2.00	
Canton ATC (1+1)	AAS	*	*	--	*	
Extended Radiologic Tech	AAS	*	*	*	*	
Individual Studies	AA	*	*	*	*	
Lib Arts Bus Adm	AS	2.73	2.83	2.84	2.65	
Crafts Management	AAS	2.56	*	--	*	
Wilderness Rec Leadership	AS	2.28	2.43	2.47	2.32	
Computer Science	AS	2.82	2.79	3.20	3.08	
Env Science/Forestry	AS	2.57	2.56	*	2.41	
Criminal Justice	AAS	2.32	2.43	2.30	2.52	
Wanakena Forestry Program	AS	2.10	2.39	*	*	
Radiologic Technology	AAS	2.93	3.00	2.81	3.26	
Secretarial Sci/Executive	AAS	2.60	2.71	2.99	2.87	
Bus Adm Career	AAS	2.93	2.63	2.80	2.81	
Biological Technology	AAS	3.00	2.60	2.64	2.47	
Secretarial Sci/Medical	AAS	2.81	2.79	2.92	2.84	
Retail Business Mgmt	AAS	2.51	2.29	2.52	2.72	
LPN Army Reserve	CERT	--	--	--	--	
Ext Prac Nur (SL)	CERT	2.22	*	*	--	
Ext Prac Nur (ML)	CERT	2.40	*	--	--	
Prac Nurs (SL)	CERT	2.82	2.73	2.90	2.87	
Prac Nurs (ML)	CERT	3.21	2.87	2.88	2.52	
Com Men Health Asst	AAS	2.80	3.21	2.71	2.82	
Secretarial Studies	CERT	2.73	2.76	2.47	2.34	
Community Res Care	CERT	2.85	2.98	2.70	2.88	
ADN/RN	AAS	3.16	3.31	3.16	2.90	
Com Men Health Asst/Geron	AAS	2.84	2.40	2.71	2.88	
Clerical Studies	CERT	2.34	2.17	2.56	3.13	
Gerontology	CERT	*	*	*	--	
Ski Area Mgmt	CERT	2.59	2.35	*	--	
Pulp & Paper Tech	CERT	*	*	--	--	
Rec Facilities Mgmt	AS			*	2.15	

*Data generated during Spring semester. Majors with 5 or less students are not listed. Contact IR office for additional explanations.

breakdown of that data.

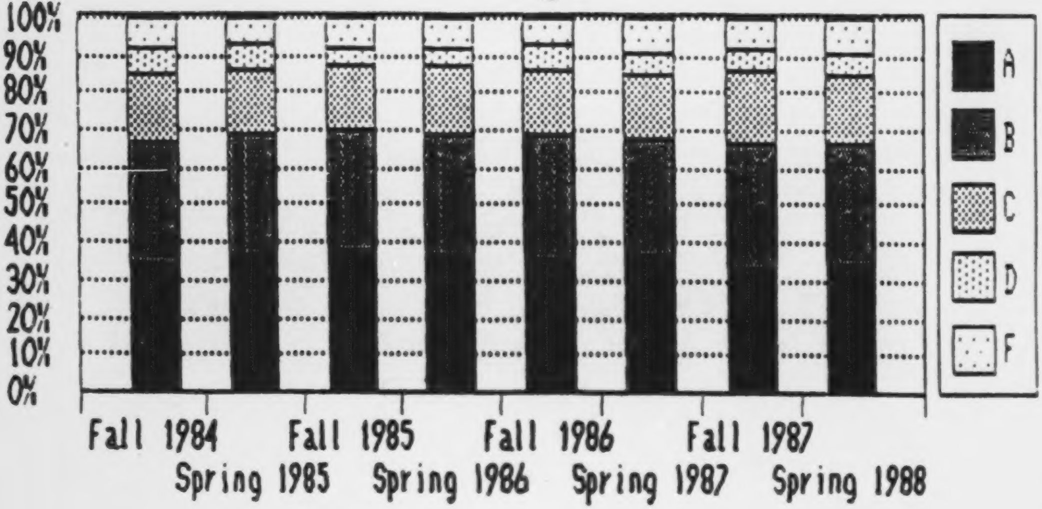
A cursory review of that data revealed mean GPA's for the majority of majors to be close to the 3.0 level. Questions were now generated about the actual grades students were receiving. Figure 1 was prepared to provide an overview of grade percentage distributions over a similar longitudinal time frame. The grade distribution data indicated the percentage of A's were consistently above the 33% level, B's 30% level, C's 14% level with D's and F's combined at the 13% level. In essence, there existed a skewed curve with a disproportionately excessive percentage of A's and B's accompanied by a disproportionately low percentage of C's, D's and F's.

Further longitudinal analysis of the matriculated student population indicated a higher percentage of the student cohort classified as academically disadvantaged (42% in 1984 to 66% in 1987) who had a lower percentage attrition rate (46% in 1984 to 39% in 1987) than the remaining population (23% in 1984 to 53% in 1987). In addition, the percentage of students on the Dean's lists remained at a constant proportional level while the percentage of students receiving academic deficiency notices (29% in 1984 to 14% in 1987) declined. The latter statistic having a direct impact on the number of students being placed on academic warning, which also declined during the same period (14% in 1984 to 9.3% in 1987).

Thus, an overall analysis of academic quantifiable measures (which were defined as standards) revealed the college was in a massive state of grade inflation. Essentially, some form of

Figure 1

Grade Percentages 1984-88



subjective, structural or environmental interventions (or combinations thereof) were being employed to encourage academically marginal students to persist at higher achievement levels than their secondary school performances would indicate.

Outcomes/Implications/Recommendations

Having presented the aforementioned data to an appropriate institutional managerial group, there was genuine consensus that an ethical inconsistency did indeed exist with regards to academic grades. Initially, the discussion focused on raising the entering student characteristics through a sustained marketing strategy. That was dismissed as unrealistic pursuant to the institution's open door philosophy and distinct mission; the socio-economic environment of the service area; and, the subjective image the institution apparently carried in the community.

The discussion then evolved around potential strategies to improve the institution's image. That related back to the grade inflation dilemma. Two rationales were offered for the high grades. First, the majority of students were first generation college and the institution had a moral mandate to encourage them to persist; and second, it was felt higher grades would cut the overall attrition rate thus maintaining the institution's head count and therefore, fiscal viability during a period of projected declining enrollments. In essence, the college was facing a Catch-22 scenario.

The first action plan developed to confront the grade inflation problem centered around informing the faculty of the data. Because of the academic freedom issue and a unionized faculty, this was to be done professionally in a constructive non-threatening manner. Basically, full time faculty would be asked to review and strengthen both the substance of their academic curriculum and the standards used to establish their grading policy. Concurrently, due to the large number of adjuncts, a series of information sessions was suggested to acquaint them with the situation and to advise them on college grading policy and procedures.

The second action plan evolved around the college advisement and learning assistance program. It was suggested greater emphasis be placed on institutional placement tests. Their standards should be tightened and students properly advised to enroll in specific remedial/developmental courses. In that regard, curriculum and standards for those courses would be uniformly maintained whereve offered. Comprehensive advisement centers were established (which included a learning lab) where students could go for additional tutoring, career and personal counseling. Finally, a master student program was initiated where first-time students would be exposed to a variety of issues, policies and skills required to be successful college students.

As previously stated this was a preliminary investigation initiated by the analysis of mediocre first-time student select characteristics. Pending institutional priorities, commitment, support, and resources, the following recommendations for further research are suggested in order to ascertain what affect the aforementioned plans have had on the institution's academic standards:

1. A detailed longitudinal grade distribution analysis should be generated between campuses by faculty status to ascertain if significant differences exist. (In Progress)

2. An extended student tracking program by campus and major should be designed and implemented to ascertain what affect the master student program has on student GPA's and retention.

3. A campus-wide pre and post test procedure for all remedial/developmental courses should be implemented to ascertain if students have acquired appropriate college-level skills.

4. A select random sample of students by major (which do not require state licenses) and campus should be administered appropriate proficiency tests prior to graduation to ascertain what relationship exists between their scores and GPA's.

5. A longitudinal attrition study should be conducted to ascertain specific reasons students choose to leave the college prior to graduation. (In progress)

6. A community assessment survey should be developed, funded and implemented to ascertain what impact the college has on the service area and what image the service area has of the college.

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STRATEGIC DECISION MAKING IN THE CONTEXT OF SHARED GOVERNANCE

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INTRODUCTION

The factors that will impact most strongly on governance processes of public institutions of higher education during the years ahead are rooted both in general considerations regarding the nature and direction of academic leadership and in particular concerns deriving from the special character of individual institutions. While these latter characteristics may (and frequently do) include an institution's location and proximity to heavily urbanized areas, a non-traditional and pluralistic student body, and an uncertain level of public funding, these particular factors are entwined in a broader set of issues. These larger issues, which have received considerable and widespread attention, have been identified and summarized by the Carnegie Foundation's report on governance in higher education, The Control of the Campus, as the need to strike an appropriate balance between what is termed the "twin obligations of institutional integrity and public accountability."[1]

It is clear that the governance issue is indeed fundamental, for the health of the educational enterprise is in the long run determined not only by the "formal decision arrangements" by which institutions carry on their work, but also by the "informal procedures by which standards are maintained." In the words of the Carnegie Foundation report, the "task of governance is to sustain and strengthen the essential core," that is to say, teaching and research.[2]

ACCOUNTABILITY AND AUTONOMY

The concept of accountability, in the context of a college or university, requires that those who make decisions (or provide services) be answerable to those who support them and those who are affected by them. Accountability requires that decision makers or service providers explain and, where appropriate, defend what they do.

The institutional integrity of a college or university refers, on the other hand, to a venerable tradition of collegiate autonomy and faculty self-governance extending back to the medieval universities of Paris, Oxford, and Bologna and embraces what the Carnegie Foundation has called the "essential functions" that relate to teaching and research: selection of faculty, the content of courses, the process of instruction, the establishment of academic standards, and the assessment of performance.

Early in this century, an attempt was made to resolve the inherent tension between the principles of accountability and autonomy. In 1915 the General Declaration of Principles, adopted by the newly established American Association of University Professors (AAUP), endorsed the principle of responsible faculty self-regulation. That faculty autonomy was to be exercised responsibly is evident in the AAUP's assertion that a "shelter" would not be provided "for inefficiency, for superficiality, or for uncritical or intemperate partisanship."[3] If the faculty fails to provide effective self-regulation where such abuses do occur, the AAUP predicted: "it is certain the task will be performed by others."[4] Hence, at the core of the argument for participatory governance in the academy lies a longstanding awareness of the requirement for adequate forms of responsibility and accountability.

More recently, in 1966, the same principles were again endorsed when the AAUP, the American Council on Education, and the Association of Governing Boards of Universities and Colleges issued its Statement on Government of Colleges and Universities:

> The faculty has primary responsibility for such fundamental areas as curriculum, subject matter and methods of instruction, research, faculty status, and those aspects of student life which relate to the educational process. On these matters, the power of review or final decision lodged in the governing board or delegated by it to the president should be exercised adversely only

> in exceptional circumstances, and for reasons communicated to the faculty. 5

The integrity of the essential academic core thus requires faculty participation and self-regulation, although subject to review and accountability at broader levels of institutional responsibility. However, as the 1966 Statement goes on to state: "Agencies for faculty participation in the government of the college or university should be established at each level where faculty responsibility is present." In addition, "an agency should exist for the presentation of the views of the whole faculty."[6]

The broadest level of faculty representation in institutional governance has, historically, been embodied in the faculty senate and evidence clearly suggests that the senate as a vehicle for faculty representation continues to thrive. However, since the time of the 1966 Statement, unionization of faculties, particularly at public institutions of higher education, has proceeded apace and, in this decade, the faculties on many hundreds of campuses are represented by an elected bargaining agent. Among New Jersey state colleges, for example, the principle of faculty participation in institutional governance has, while still subject to rigorous review and accountability, thus been provided with additional and at times alternative structures and processes for implementation.

THE MORAL BASIS OF SHARED GOVERNANCE

In a recent work, Donald E. Walker identified the link between the moral dimension of shared governance in the academy and its practical results:

> At the heart of the moral vision of the university is the centrality of the individual. The belief that operates as a conscious and unconscious dynamic is that the individual celebrating his or her own intelligence through industry informed by moral vision will make the best contribution to the university and to the world. People are regarded as more important than procedures.
>
> There are also implications for [decision making] style in a stress on grass-roots problem solving. Again, the more the individual affected by a decision can be involved in that decision, the better it will "stick." Decisions reached at the lowest possible level acquire added validity because there is a moral rightness about them. The recognition of the moral quality of the decision-making process in a university makes understandable many phenomena of campus life that are [not] otherwise comprehensible.... 7

Past history, both at the authors' own institution (Kean College of New Jersey) and on the campuses of many other colleges and universities, provides substantial evidence that when affected constituencies participate in governance processes, they are more likely to support the results of those processes. As Roger Fisher and William Ury point out:

"Even if the terms of an agreement seem favorable, the other side may reject them simply out of a suspicion born of their exclusion from the drafting process. Agreement becomes much easier if both parties feel ownership of the ideas."[8] Conversely, "if you want the other side to accept a disagreeable conclusion, it is crucial that you involve them in the process of reaching that conclusion."[9]

A perspective very different from the concept of shared governance is what has been termed the "top-down" or hierarchial view of administration. This approach is sketched by Walker:

> The trustees make the policy for the institution. The president carries it out as an enlightened despot. The deans and other administrators take orders literally and exactly from the president and carry them out without murmur. The professors leave the running of the institution to the president and the policy to the trustees. Their only concerns are their teaching and scholarly work and, of course, their students. The students are at the university to learn from those who know more than they. When the scenario is not played out according to this pattern, something is wrong. Pathology is present. 10

As Walker points out, however, when this approach is tried, "chronic tendencies to confrontation between administration and campus constituencies emerge. And eventually administrators pay a price in resentment created by the so-called pathologies with which they must deal."[11] An unfortunate example of this scenario was the period soon after collective bargaining had been implemented at New Jersey's system of state colleges, when an atmosphere of antagonism, stridency, and confrontation existed between faculty and administration, including two strikes. The lessons of that period demonstrated that "hard-line" approaches and confrontations were incompatible both with traditions of shared governance and with advancing the essential academic core of the institution.

THE SCOPE OF SHARED GOVERNANCE

Shared or participatory governance in the context of a college or university includes numerous constituencies: faculty senate, union, student organizations, minority constituencies, department chairpersons, deans, program coordinators, and members of academic disciplines. The need for participation arises primarily when major policy must be made and it requires that those who are substantially affected by a decision (or those who must implement that decision) be consulted by the decision-makers. The process of participation thus entails consultation (including discussion and negotiation), the forging of consensus, the decision itself, and implementation.

It is important to note that participatory governance does not entail that every item of college business be subject to student and/or faculty vote. Rather, the concept of shared governance embraces the view that those who are substantially affected by decisions have some significant authority as to how those decisions are made. The actual degree of authority will vary according to constituency and circumstance, and major responsibility for certain decisions rests with the administration. But as a general proposition, shared governance in the academy accepts the view that participation of autonomous moral agents in decisions which affect them increases the likelihood that those decisions will be more effectively implemented.

GOALS OF SHARED GOVERNANCE

Apart from its obvious moral or ethical dimensions, shared governance creates a context in which those who must implement decisions (or who are affected by them) are more likely to support those decisions. The ultimate aim, therefore, is initiative and effective forward movement of the institution, particularly as it relates to the essential academic core.

Participation in institutional governance (whether formal or informal) is, in operational terms, thus a unifying concept which integrates process and achievement. Through the building of coalitions among affected constituencies, a base of institutional support for a comprehensive array of initiatives can be developed. At Kean College, for example, over the past three years a group of initiatives (known collectively as the Excellence and Equity Project), assisted through a special Challenge Grant program inaugurated by Governor Thomas Kean in 1985, has led to fundamental institutional change. These initiatives have included: the development of an innovative system of faculty-developed outcomes assessments in academic programs, the introduction of a six-course interdisciplinary core in the general education program required for all undergraduate students, a freshman center and mandatory freshman seminar, learning assistance programs for underprepared students, the integration of computer applications into the academic disciplines, and a comprehensive program for faculty and professional staff training and development.

MAJOR CAVEATS

Participatory governance tends to work best with those in the mainstream, that is, students, faculty and administrative staff who are deeply involved in the life of the institution and who are committed to its goals. Those who are relatively uninvolved will, therefore, not be engaged by a process of participatory governance unless affirmative and vigorous steps are taken to encourage such individuals to identify with the cultures and goals of the campus. At Kean College, this remains an important undertaking for the years ahead.

In addition, participatory governance is a difficult, lengthy and sometimes tedious process. Consultation, discussion, negotiation, and the forging of consensus among affected parties is inherently more complex than simply issuing orders in a hierarchial and authoritarian manner. However, the additional effort that participatory management requires must be seen as an investment. Its dividends are decisions which have far greater acceptability and support than those which are issued top-down.[12]

THE PRESIDENTIAL ROLE

It is widely acknowledged that it is the responsibility of the president to articulate the moral vision of the college or university and symbolize its most fundamental values. On a day-to-day basis, however, the president must employ a practical, participatory, problem-solving approach in order to assure the institution's commitment to real (as opposed to purely symbolic) innovation and excellence. The participatory, problem-solving approach is, of course, based on the premise that "many problems can be resolved to the mutual satisfaction of the people affected or else that an approach can be made that is close enough to these goals that at least there is acceptance."[13] This fundamentally integrative approach to presidential leadership is discussed in some detail by Walker:

> The problem-solving definition of presidential responsibility is more realistic than the hierarchial stereotype of the president as the master decision-maker for the organization. Presidents do, of course, make decisions in the traditional sense. The process deserves discussion. Most effective administrators I have observed think of themselves not as responsible for making every decision but as presiding over a process. Their job, as they see it, is to ensure that decisions are in fact made, and within appropriate time limits. They also pay attention to the procedures by which such decisions are made and the constituencies represented in arriving at those decisions. Effective presidents view the fact that the decisions were made consultatively, sometimes raggedly, and often with a team, as no rebuke to the final result. [14]

But according to Walker, not all decisions must be consensual:

> Sometimes the president can advance the dialectic by saying: "Fine, we seem to have come as far as we can together. All the alternatives that we can see have been explored. Since there is no agreement, I'm assuming you wish me to make the decision. This is your last chance..." Again, the point should be emphasized that the president cannot escape responsibility for the decision, however it is arrived at. Presidential action of this sort may renew the dialectic process. If not, so be it. The fact that the group reaches an impasse probably signals that consent, if not approval, has been given. Also I'm not suggesting that every decision requires a group meeting: there is a process of consensus creation, consensus seeking, and consensus affirming that goes on with or without group meetings. If a consensus is latently present, a presidential decision can call it forth and pin it down. 15

We are reminded, however, that the source of effective presidential leadership in the academy derives from the matrix of shared and participatory governance:

> When high-profile, aggressive symbolic behavior is required of the president, it is important for him or her to remember the source from which authority is derived.... The president's job.... is to summon that authority from its basic sources, from the people in the organization. He must remember the human and political rights of those people, using his authority to transact the business of the university and to move it in the directions dictated by its character and the wishes of its constituents on and off the campus. 16

This is not to deny that the president must initiate, activate, inspire, and monitor. He must convey a vision and be firm with respect to goals, purposes, and ends, although flexible regarding strategy and tactics. To cite Walker once again:

> Of course, leaders must push. The most effective administrators.... push with a sense of direction and extraordinary persistence. They do not hesitate to state their vision for the university and to do so repeatedly. They interpret events in the life of the university in keeping with this ideal. They negotiate skillfully and effectively. They use the established democratic procedures of the institution to the limit, with all the energy and vision they can command. Such administrators also, however, cherish deeply a vision of the way the campus should transact its business. They are mindful of the tone of decision making. They are sensitive to the esprit of the members of that academic community. And they recognize that in spite of vigorous forward thrust and drive, they do, indeed, serve with the consent of the governed. When they run contrary to the wishes of significant numbers of their constituents, they may persevere or try other alternatives. But when they sacrifice or modify their position, they are not petulantly aggrieved because their lofty vision has been frustrated by academic midgets. 17

COLLECTIVE BARGAINING IN A CONTEXT OF SHARED GOVERNANCE

Background

While the history of faculty unionization in colleges and universities has been detailed elsewhere, it should be pointed out that the rapid growth of collective bargaining over the past decade is largely the result of an increase in faculty dissatisfaction due to changes in the environment of higher education. Reductions of real income as a result of inflation, reduced promotion opportunities, greater difficulty in achieving tenure, actual and projected enrollment declines, and uncertain public support combined with attempts to erode local campus autonomy, have taken their toll on faculty morale and esprit de corps. At the same time "traditional structures do not seem to be working very well," and according to the report of the Carnegie Foundation, there is a "curious mismatch between the agendas of faculty councils and the crisis now confronted by many institutions."[18] Faculty unions have stepped into the breach, in large part to achieve aims that more traditional methods of collegial and participatory governance seemed unable to provide.

Collegiality

Robert Birnbaum has defined collegiality as "the establishment of interpersonal and intergroup relationships based on a mutual commitment to professional values, civility in interactions, and faculty influence in the decision-making process."[19] The tradition of collegiality in the academy provides a potent basis for transforming strident and destructive forms of collective bargaining behavior into patterns that could strengthen, rather than weaken, institutions of higher education. As Birnbaum explains:

> There are powerful forces in colleges and universities that tend to make collective

> bargaining in higher education a productive and constructive process. Supporting the development of problem-solving orientations between faculty and administrations at the bargaining table are traditions of joint administrative-faculty participation in decision-making, shared values and norms, orientations toward civility and collegiality, administrative participation in faculty roles and faculty support for the performance of administrators, relatively low status differentials and reductions in the differences of power between the two groups, and increased willingness of faculty to confront differences and introduce new points of view because of the security of union representation. 20

Moreover, it has been argued that the adversarial model of collective bargaining is largely inappropriate for institutions of higher education.

> Academic institutions originally adopted the assumptions and structures of industrial bargaining because there were no other references or models to follow. In particular, its adversarial orientation has proven to be difficult to accommodate to the academic environment, because the traditional norms of the academy have been based upon trust rather than suspicion. It has been suggested that the adversarial approach to bargaining will change over time as the parties to bargaining mature in their relationship. 21

The perspective held by some, that adversarial relationships remain the norm for administrations and unions may, Birnbaum suggests, be related to an unmodified adoption of the industrial model of bargaining to issues of academic governance.[22] In contrast to the principle of shared and participatory governance which characterizes institutions of higher education, the "adversary principle is part of the ideology of American industrial relations."[23] An uncritical acceptance of the industrial bargaining model in the context of higher education would, therefore, be likely to lead to the view that any departure from the adversarial norm represents "collusion" and is suspect. Such an approach to relationships between union and administration is certain to freeze both parties into positions and behaviors that seriously weaken the institution's ability to respond to the evolving needs of the citizens of our State. Moreover, as Birnbaum points out:

> Rigidity is dysfunctional to the purposes of higher educational institutions in any situation but can be particularly damaging when resources become increasingly scarce and environments hostile. More than ever, during such periods institutional survival may be dependent upon the ability to develop new missions, exploit opportunities, and increase responsiveness to the needs of their student constituencies. 24

Constructive vs. Destructive Relationships

The aim of participants in the process of academic collective bargaining should be to avoid destructive conflict and make it "creative, constructive, and supportive of institutional goals."[25] As mentioned above, there is an unfortunate tendency among some to assume that destructive conflict, which all too often is the norm for collective bargaining in an industrial setting, must result from implementing a collective bargaining process in institutions of higher education. However, destructive conflict does not necessarily mean that the interests of faculty and administration are fundamentally divergent. In New Jersey, for example, with its two-tier approach to collective bargaining for its system of senior public colleges, there is a powerful basis for constructive and creative bargaining between administration and union. The advantage of a two-tier approach to collective bargaining is that "distributive" or zero-sum issues (where a gain for one side represents a loss for the other) are predominantly addressed on a statewide negotiating level, while "integrative" or non-zero-sum issues (in which conflict elicits identification of mutual interests that could potentially produce gain for all affected parties) are negotiated on local campuses. The danger lies not so much in the absence of a mutual commitment by administration and union to the integrity of the institution's processes or to the advancement of its mission, but rather, as Birnbaum suggests, in the "structure of bargaining itself and the perceptions of the participants about the nature of the bargaining process."[26] These lead to "predictable [e.g. destructive] behavioral consequences that are typical of intergroup competition in situations in which one or both groups believe it can achieve its goals only at the expense of the other."[27] It is thus incumbent upon both union and administration to continue to press for behaviors which will strengthen responsible participatory governance. The alternative is starkly characterized by Birnbaum:

> Institutions that fail to understand the powerful dynamics for spiraling conflict inherent in bargaining and do not take steps to control it may find the unusual bonds existing between faculty and administration disrupted, or conceivably destroyed. If this happens, the institution that remains may still be called a college or university, but it will have lost the norms and values that constitute its essence and make it a distinctive agency of society. The risks may be great; the cost of not acting may be higher. 28

THE BOARD OF TRUSTEES AND SHARED GOVERNANCE

The report of the Carnegie Foundation suggests a basis for a conceptual link between the principle of public accountability and shared governance. The test of that link's strength must be sought in the unique role that college boards of trustees play in institutional governance. A brief review of essential board functions would, therefore, prove useful.

Traditionally, college boards of trustees select presidents, set policies, pass on budgets and personnel actions, and, according to the Carnegie Foundation report, must increasingly "participate in shaping educational priorities for the future and actively involve themselves in the review of the quality of the institution."[29] Boards of trustees, therefore, are being asked to assume a more active role, and one that focuses with greater intensity on broader and more fundamental institutional interests.

According to the Carnegie Foundation report:

> Trusteeship, by definition means fulfilling a special trust -- representing the public interest without compromising the community of learning.... Ideally, trustees are appointed because they have a broad perspective and because of their interest in the institution overall. 30

Much of the same point is made by J.L. Zwingle when he observes that "academic boards should conceive of themselves in the way Edmund Burke in the eighteenth century conceived of Parliament, and trustees should see their role as he viewed his own responsibility as a member of Parliament from Bristol."[31] The words of Burke are well worth recalling:

> Parliament is not a congress of ambassadors from different and hostile interests; which interests each must maintain, as an agent and advocate, against other agents and advocates; but Parliament is a deliberative assembly of one nation, with one interest, that of the whole; where, not local purposes, not local prejudices ought to guide, but the general good, resulting from the general reasons

> of the whole. You choose a member indeed; but when you have chosen him, he is not member of Bristol, but he is a member of Parliament.

For boards of trustees, question-asking and process-monitoring should be directed to the essential areas of institutional performance: educational program, student achievement, personnel, and financial process. In addition, the principle of shared governance calls upon trustees to assure themselves that the president is indeed monitoring the integrity, effectiveness, and scope of participatory decision making. As Rhoda M. Dorsey notes, trustees "must act as outside members, bringing an outside perspective and asking the kinds of questions that lead insiders to explain and understand their own ideas better. Necessary for this kind of task are trustees who know the institution, have sensitivity to faculty and student feelings about self-government and feel at ease in talking with faculty and students."[32]

This focus on question-asking and process-monitoring by trustee boards is extended by George W. Angel and Edward P. Kelley to the role of faculty unions on many campuses, especially in terms of its impact on traditional forms of faculty participation in college governance. Angel and Kelley argue for the need of trustees to become better informed on the newly emergent patterns of collective bargaining and they advocate special workshops for trustees on academic bargaining issues. "Industrial experience," they note, "does have valuable carry-over relative to the technical aspects of bargaining....but sheds almost no light on such special aspects of faculty bargaining as the scope of bargaining (governance issues), the impact on organizational and administrative patterns, the psychology of faculty--administrative resources and authority, and new governmental and political relationships."[33]

In closing, it is perhaps most appropriate to cite John D. Millett's view that although the president provides the essential link between the faculty and board of trustees, it is, ultimately, the faculty which provides the soul and lifeblood of the higher educational enterprise:

> A college or university acquires prestige through the competence and the performance of its faculty. The president is leader of a learning environment and an economic enterprise. The president can encourage intellectual achievement but he or she cannot direct its realization. Since an institution of higher education could not exist without a faculty, it must find the ways and means to incorporate the faculty into the ongoing life of the college or university as both an intellectual and economic enterprise. 34

NOTES

1. *The Control of the Campus: A Report on the Governance of Higher Education* (Washington: The Carnegie Foundation for the Advancement of Teaching, 1982), p. 3.

2. *Ibid*., p. 7.

3. *Ibid*., p. 17.

4. *Ibid*.

5. *Ibid*., p. 18.

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7. Walker, Donald E. *The Effective Administrator: A Practical Approach to Problem Solving, Decision Making, and Campus Leadership* (San Francisco: Jossey-Bass, 1979), pp. 23-24.

8. Fisher, Robert and Ury, William. *Getting to Yes: Negotiating Agreement Without Giving In* (Boston: Houghton Mufflin, 1981), p. 28.

9. *Ibid*., p. 27.

10. Walker, 1979, p. 6.

11. *Ibid*., pp. 7-8.

12. Participation by a broad range of constituencies in the college planning process has the potential of yielding financial dividends as well. See "Ohio University Finds Participatory Planning Ends Financial Chaos," *Wall Street Journal*, May 27, 1981, p. 1.

13. Walker, 1979, p. 125.

14. *Ibid*.

15. *Ibid*., p. 226.

16. *Ibid*., p. 130.

17. *Ibid*., p. 16.

18. *The Control of the Campus*, 1982, p. 74.

19. Birnbaum, Robert. *Creative Academic Bargaining: Managing Conflict in the Unionized College and University* (New York: Teachers College Press, Columbia University, 1980),p. 16.

20. *Ibid*., p. 27.

21. *Ibid*., p. 21.

22. *Ibid*., p. 5.

23. *Ibid*., p. 6.

24. *Ibid*., p. 11.

25. *Ibid*., p. IX.

26. *Ibid*., p. XII.

27. *Ibid*.

28. *Ibid*., p. 245.

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30. *Ibid*., pp. 72-72.

31. Zwingle, J.L. "Evolution of Lay Governing Boards," in Richard T. Ingram and Associates (Eds.) *Handbook of College and University Trusteeship: A Practical Guide for Trustees, Chief Executives, and Other Leaders Responsible for Developing Effective Governing Boards* (San Francisco: Jossey-Bass, 1980), p. 25.

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33. Angel, George W. and Kelley, Jr., Edward P. "Responding to Unionism," in *Handbook of College and University Trusteeship*, 1980, p. 259.

34. Millett, John D. "Working With Faculty and Students," in *Handbook of College and University Trusteeship*, 1980, p. 202.

Use of Demographic and Financial Projections in the Development of a Strategic Long-Range Plan

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INTRODUCTION

Most enrollment management plans in higher education include projections of high school graduation rates to estimate the potential pool of traditional entering freshmen. Interpretations of these data, however, and the resulting recruitment strategies, can yield a number of very different enrollment scenarios. This situation can become especially complex at highly selective institutions, whose target pools tend to have a much narrower range of academic potential and a much broader geographic representation than those of less selective institutions.

A steep and protracted decline in the number of high school graduates in the United States has been projected for the late 1980's and early 1990's, without significant recovery until the late 1990's (WICHE, 1984; WICHE, 1988). Even assuming that the shape of the distribution of academic potential for these graduates remains constant -- a difficult assumption to test reliably -- institutions that hope to retain the same "quality" of student body will find themselves in a much more competitive recruitment stance for the next decade. Clearly, not every institution will attain this goal: there are simply too few high achieving students to go around. Other institutions will discover, as some already have, that freshman classes will be increasingly difficult to fill even if quality is not an issue. The purpose of this paper is to discuss in detail the use of demographic and financial projections at Franklin and Marshall College to support the viability of a managed (i.e., intentional) enrollment decline of 12% between FY85 and FY94.

STRATEGIC PLANNING AT FRANKLIN AND MARSHALL

In 1985 the Office of Budget and Planning at Franklin and Marshall College developed, in consultation with senior administrative offices and the faculty, a strategic long-range plan to respond to the general challenge outlined above. This plan included the following 10 information parameters needed to produce objectives tailored specifically to the College's goals and student population:

-- use of sub-regional and public vs. private high school graduate projections to estimate the size of appropriate markets

- use of admission and yield rates to gauge recruitment progress
- use of retention rates to project class cohort and total student body size over time
- use of resource and expenditure data to project impact of tuition loss and recovery
- use of SAT score and high school class rank data to measure the impact of enrollment management strategies on the academic "quality" of incoming freshman classes
- use of ethnic and geographic data to monitor efforts to increase the diversity of the student body
- use of facilities data to project residential occupancy rates
- use of faculty size, salary, productivity, and distribution data for need and quality analyses
- use of financial aid data to project future funding needs and resource availability
- use of course enrollment and major data to monitor shifts in curricular preferences

The first four types of planning information assisted in the setting of enrollment goals (e.g., projecting the size and geographic/academic distributions of incoming freshman classes and the entire student body for the next 10 years). The other types of information were used to monitor those aspects of the institution that contribute to the quality of instruction and student life. The latter function is considered critical to fulfilling the College's mission and, from an enrollment management standpoint, creating an environment that promotes student success and retention while enhancing the College's reputation among future freshman cohorts.

DATA SOURCES & ASSUMPTIONS

The 1984 WICHE high school graduate projections were used to formulate the original long-range plan, and the 1988 update was used to refine it. Both internal and comparative budget and endowment data were used to project resource availability. The major assumption underlying the plan was that maintaining or increasing the actual and perceived selectivity of Franklin and Marshall was critical not only to improving its relative position among the prestigious U.S. liberal arts colleges, but also to ensuring that it could maintain desired enrollment levels of the most able students when the demographic decline set in. Related assumptions were that prestige is a function of quality (rather than empty promotional rhetoric), that quality can be measured using a series of complementary indices, and that improvements in quality would be difficult or impossible to achieve without adequate resources. The overarching challenge, then, was to implement enrollment management strategies that would heighten selectivity, produce quantifiable improvements in related quality criteria, and maintain the fiscal strengths of the college.

PLANNING PARAMETERS

Demographic Analyses: The number of annual high school graduates in the 6 states that produce approximately 85% of the annual freshman class at Franklin and Marshall was projected to decline by 37% between 1979 and 1994, and by 24% between 1985 (the year that the plan was developed) and 1994. Comparable figures for the tri-state region (Pennsylvania, New York, New Jersey) that supplies approximately 70% of the College's student body were 37% and 22% respectively, while the national declines were projected to be 23% and 9% respectively. In light of the greater size and stability of market share from the tri-state region, those figures were used to project market size for the entire student body.

There were no reasons to expect a negative skew in the distribution of students' academic potential; in fact, anecdotal observations suggest that a positive skew (i.e., a decline in the proportion of "top" students) is likely to occur over the next 2 decades. This is due in part to lower birth rates among those families that have historically viewed higher education as important, and in part to the lack of an effective national program oriented toward increasing participation rates among other populations. A simulation model was developed to project the draw from the top of the SAT distribution needed to maintain vs. improve the current F&M student distribution under conditions of an evenly vs. unevenly distributed population decline. The results, summarized in Table 1, indicated the degree to which Franklin and Marshall would need to increase the draw from the high end of the distribution as 1) that end shrinks, 2) the College becomes more selective, or 3) both.

Table 1

1985 and Projected 1994 SAT Distributions

SAT Verbal Scores	1985 Franklin and Marshall Frosh	% of Total	1985 National N	F&M Share of National	1994 National N	F&M Share of National
700 to 800	11	2%	11,297	.097%	10,252	.107%
600 to 690	125	23%	65,680	.190%	59,604	.210%
500 to 590	298	55%	190,591	.156%	172,959	.172%
< 500	109	20%	709,793	.015%	644,130	.017%
Total	543		977,361	.056%	886,955	.061%
Mean	567		431			

Table 1 (Continued)

1985 and Projected 1994 SAT Distributions

SAT Math Scores	1985 Franklin and Marshall Frosh	% of Total	1985 National N	F&M Share of National	1994 National N	F&M Share of National
700 to 800	49	9%	34,975	.140%	31,739	.154%
600 to 690	223	41%	131,957	.169%	119,750	.186%
500 to 590	244	45%	256,834	.095%	233,074	.105%
< 500	27	5%	553,595	.005%	502,382	.005%
Total	543		977,361	.056%	886,955	.061%
Mean	607		475			

The 1994 national projections above incorporate the 9.25% decline in high school graduates nationally but the same SAT-taking rate and score distributions as in 1985. They also assume a constant number and distribution of Franklin and Marshall freshmen in 1985 and 1994. Even under these benign circumstances, the College would need to increase its draw from a decreasing graduate pool at the high end of the SAT range in 1994 in order to maintain the same size and quality of freshman class that it enjoyed in 1985. Under less benign assumptions -- a larger-than-expected decline in the number of high school graduates, a decrease in the SAT-taking and college-going rates, a positive skew in the score distribution, an institutional objective to improve rather than maintain student quality, or some combination of these circumstances -- the needed increase in the College's draw from the top of the range would be virtually unachievable. Although these latter assumptions involve more intuitive than statistical forecasting, they are not inconsistent with national educational projections that have been reported over the past few years.

The impression left by these analyses was that even under the best of circumstances, Franklin and Marshall College would be hard-pressed to maintain both the number and the academic quality of students that it has enjoyed in the past. An analysis of comparison colleges' SAT data suggested not only that more selective institutions attracted more capable applicants, but also that matriculants at the most selective institutions tended to have higher SAT scores than the applicant pool. The reverse trend was observed at less selective institutions, indicating that the gap between more and less selective colleges was even larger among accepted and matriculating students than it was among applicants. This polarization or "intellectual drift" offered further evidence that maintaining size while sacrificing quality would be less desirable than maintaining quality while sacrificing size.

The 10-year projection model also included the following targets: a 27% increase in market share (i.e., the percentage of graduates in our market areas who apply to Franklin and Marshall), a maximum admissions rate of 50% of applicants, a minimum yield rate of 30% of acceptances, and a minimum freshman-to-graduation retention rate of approximately 80%. The targets were based on both historical trend analysis and on the overarching assumption that efforts to improve the quality of the student body and the institution itself would be successful (one test of this assumption, in fact, is the difference between targeted and observed enrollment management ratios). These factors, combined with the sub-regional population projections, produced a set of expected student body sizes consistent with both the demographic trends and the College's goals (see Table 2).

Table 2

Summary of Enrollment Projection Model

	Actual			Projected						
Fiscal Year	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
H.S. Graduates	424,479	408,844	406,070	416,088	392,189	359,744	337,788	333,311	330,750	329,694
Market Share	.806	.789	.942	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Admissions Rate	52.2%	62.1%	43.7%	38.3%	37.8%	40.1%	43.7%	46.5%	47.2%	47.5%
Yield Rate	29.6%	26.1%	31.5%	29.7%	29.7%	29.7%	29.7%	29.7%	29.7%	29.7%
Retention Rate	76.7%	75.1%	81.4%	77.7%	77.7%	77.7%	77.7%	77.7%	77.7%	77.7%
Applicants	3,610	3,350	3,852	4,133	4,235	3,992	3,661	3,438	3,392	3,366
Offers	1,884	2,080	1,683	1,583	1,600	1,600	1,600	1,600	1,600	1,600
New Freshmen	558	543	530	470	475	475	475	475	475	475
Transfers	21	37	28	28	28	29	27	25	23	23
Total Freshmen	559	575	553	488	491	491	491	491	491	491
Total Sophomores	493	491	519	490	434	437	436	435	434	434
Total Juniors	455	469	471	488	462	411	413	411	409	408
Total Seniors	443	415	446	448	465	440	392	393	392	390
All Classes	1,950	1,950	1,989	1,914	1,852	1,779	1,732	1,730	1,726	1,723
Full-time financial equivalence (FTFE)	1,890	1,850	1,850	1,864	1,774	1,704	1,659	1,658	1,653	1,651

NOTES: The Transfers and Totals by classes for FY1988 are also projected figures.
This table represents the planning model in the Fall of 1987.

The net enrollment decrease between 1985 and 1994 was projected to be 227 students (- 12%) and 239 FTFE (- 13%).

Financial Analyses: Positive changes associated with down-sizing the student body while increasing the size of the faculty and improving other program features include lower student : faculty ratios, increased on-campus residency rates, improved admissions (lower) and yield (higher) rates, and increased availability of financial aid to students. The major negative implication was a multi-million dollar loss of tuition revenue. Financial projections suggested that this last effect could be completely counterbalanced by increases in tuition rates (to peer group norms), in on-campus residency rates and room and board fees, in annual gift funds, and in the size of and cash draw from the endowment. Cost containment measures -- restricting expenditure growth to relatively modest levels (approximately inflation plus 2%) -- remained important if the College were to down-size without retrenchment. The following table summarizes the revenue projections developed with respect to a potential downsizing of the student body.

Table 3

Financial Proejctions (in 000's)

Revenues	1985	1988	1991	1994	Average Annual Change
Tuition/Comprehensive fees	$16,358	$22,044	$24,599	$28,308	8.1%
Endowment income	$948	$1,205	$2,884	$4,003	35.8%
Gifts and Grants	$2,365	$3,135	$3,465	$3,848	7.0%
Auxiliary (residence halls, etc.)	$5,347	$7,404	$9,045	$10,365	10.4%
Other	$1,975	$1,644	$1,981	$2,255	1.6%
Total	$26,993	$35,432	$41,974	$48,779	9.0%
As % of Total					
Tuition/Comprehensive fees	60.6%	62.2%	58.6%	58.0%	
Endowment income	3.5%	3.4%	6.9%	8.2%	
Gifts and Grants	8.8%	8.8%	8.3%	7.9%	
Auxiliary (residence halls, etc.)	19.8%	20.9%	21.5%	21.2%	
Other	7.3%	4.6%	4.7%	4.6%	

While all revenue sources are projected to increase over the years, endowment income and auxiliary income are expected to comprise a proportionately larger share of the total revenues by 1994. Past experiences suggest that the average annual revenue increase of 9% should be adequate to cover expenditure increases during this time period.

EARLY VALIDATION OF THE MODEL

Data from the past year have confirmed that the planning model has been reasonably accurate, at least in its early stages. Table 4 illustrates the difference between the plan's projections in the Fall of 1987 and the actual enrollment patterns through the Fall of 1988. The updated WICHE (1988) projections of high school graduates revealed a larger number of graduates from both the nation as a whole and the primary tri-state market area than had been projected by their 1982 publication (and hence, the pre-1988 versions of our planning model). Combined with the smaller than expected number of applicants at Franklin and Marshall for the 1988 Fall semester, this resulted in a slight decrease in market share. In spite of a smaller applicant pool, the large number of highly qualified applicants resulted in more admissions and a higher admission rate than originally planned. The number of matriculating new freshmen was also slightly higher than predicted.

The size of the total student body in FY88 decreased from its FY87 level, though to a slightly lesser degree (i.e., a 1.8% difference) than predicted by the model. This finding suggests that the retention rate used to project within-cohort attrition from one year to the next was lower than the observed rate. Future versions of the planning model will include a more sensitive retention index. Other changes involve use of the revised WICHE data for future years' high school graduate projections, and an increase in projected admissions offers to reflect acceptance of a larger number of applicants from the high-ability end of this expanded market.

Table 4

Comparison of Actual and Projected Figures

FY89	Original Model/ Projected Figures	Revised Model/ Actual Figures
H.S. Graduates	392,189	418,364
Market Share	1.02%	.922%
Admissions Rate	37.8%	43.2%
Yield Rate	29.7%	29.1%
Applicants	4,235	3,858
Offers	1,600	1,667
New Freshmen	475	485
FY88		
Transfers	28	25
Total Freshmen	488	473
Total Sophomores	490	516
Total Juniors	488	502
Total Seniors	448	458
All Classes	1,914	1,949

The fiscal health of the College is positive, as endowment performance has exceeded expectations and the tuition hikes, increased cash draw and total endowment growth, and cost containment strategies have achieved their desired effect to date. As a result, the College has been able not only to maintain program activities, but also to add new initiatives in such important areas as faculty development and start-up, computing, networks and other technologies. Careful monitoring of the financial projections will be needed over the next six years as the cumulative impact of downsizing the student body becomes more critical.

In summary, Franklin & Marshall was able to move systematically from the general, dire predictions of declining high school graduate populations to a constructive plan of action. Careful

financial planning has proven that a significant decrease in the number of matriculating students need not detract from the quality of the student body, the physical plant, the faculty and instructional environment, the College's fiscal health, or any other aspect of the institution. Indeed, each aspect appears to be improving as events unfold along the lines projected by the strategic long-range plan.

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INFORMATION FOR PLANNING: CAMPUS PERSPECTIVES AND PRACTICES

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INTRODUCTION

Since the late 1960's planning has received widespread attention from higher education administrators and scholars. However, although many campuses have devoted substantial time and money to planning, there is considerable agreement that attempts to apply formal planning methods in the academic environment often have been disappointing and ineffective (Baldridge and Okimini, 1982; Keller, 1983).

Campus difficulties with formal planning generally have been attributed to a lack of fit between the assumptions underlying recommended planning approaches and the operational realities of academic institutions. Most planning models contain key assumptions regarding the role of data and objective analysis. In fact, the models higher education institutions initially tried to implement were largely quantitative and assumed that comprehensive data, mathematical projections and computer simulations would provide an accurate and useful basis for determining future institutional directions and strategies. After the technical and political problems involved trying to apply these models became widely apparent, strategic planning emerged as the preferred planning approach for colleges and universities. While strategic planning processes appear to make some attempt to reflect known academic realities, they continue to rely heavily on the use of comprehensive, analytic data as a means for identifying major institutional goals and directions. Unfortunately, as with earlier planning models, many campuses have found that obtaining such data is a costly and difficult process, and that even if such data are developed, frequently there is a gap between expectations for planning and its actual outcomes.

To help avoid continued frustrations and disappointments in campus planning efforts, there is a need to develop planning guidelines that reflect actual campus conditions and constraints. The National Center for Postsecondary Governance and Finance's Institutional Planning Project, is addressing this need through a comprehensive three-year study of planning perspectives and practices which is designed to develop a coherent set of research-based planning guidelines. This paper describes preliminary findings from this study. A brief review of campus experiences with planning, is presented, including a description of their use of data in planning efforts. Then factors which appear to affect the conduct of campus planning are discussed, including their implications for practitioners. Finally, some general conclusions are drawn about the significance of the findings.

PROJECT METHODOLOGY

The Institutional Planning Project included three major research efforts: a literature review, a survey of the planning perspectives of administrators at 256 campuses, and site visits to 16 diverse institutions. The site visit phase, which provided most of the data for the findings presented in this paper, was designed to obtain in-depth information on campus planning perspectives and practices.

Sixteen of the campuses in the stratified random sample of 256 institutions drawn for the project survey were selected for site visits. These included four research universities (two public and two private), four independent colleges (two religious and two non-sectarian), four state colleges, and four public community colleges. Given limitations of time and resources, the site visit institutions were not intended to form a statistically representative sample of U.S higher education institutions. However, within each category, a systematic effort was made to include a broad spectrum of campuses with respect to such basic characteristics as location, size, mission, and governance structure. However, since the character of the governance and planning processes at each campus were not known prior to their selection, the extent to which the site visit institutions cover a full range of planning processes is unclear.

Campus staff exhibited a high degree of interest in the study. Thirteen of the 16 campuses initially selected for a site visit agreed to participate and the first three back-up campuses each agreed to cooperate.

Each visit was conducted by project staff members over a three-day period between December 1987 and June 1988. A total of 255 individuals (including presidents; senior academic, administrative and student affairs officers; planning, institutional research and other administrators; department chairs and faculty; and faculty governance leaders) were identified for interviews. Of these, 248 (approximately 60 at each major type of institution) were successfully completed, ranging from 13 to 19 persons per campus.

A protocol, containing largely open-ended questions, was used to guide interview sessions to ensure essential topics were covered as consistently as possible. However, the sessions were structured to provide sufficient opportunity for interviewees to express their own opinions, insights and judgments. The interviewees all were extremely cooperative, responded to the questions thoughtfully and frankly, and provided many valuable and provocative insights and practical ideas about planning in the academic environment.

CAMPUS PLANNING ACTIVITIES

The site visit visits indicated that the current widespread advocacy of institutional planning in higher education has influenced a broad spectrum of colleges and universities and created substantial interest in planning. First, the study revealed that during the past ten to 15 years, 15 out of 16 institutions visited had conducted or initiated at least one formal activity designed to clarify their mission and goals and/or to develop a clearer vision of their future. Second, despite limited success with most of their past planning efforts, all but three of the campuses were attempting some type of planning activity at the time of the visit. Furthermore, five of the campuses currently had an administrative position that included "planning" in its title and several additional campuses had designated planning as a specific responsibility of a particular administrative officer. Finally, the enthusiastic reaction to the study also appeared to demonstrate a high degree of concern about planning approaches and models.

The reasons many site visit campuses were concerned about, and involved in, planning varied considerably. External state or system mandates, requirements of Title III and other externally funded grant programs, and pressures from accrediting associations were major impetuses for planning at many campuses. However, most frequently, the extent of campus planning activities mirrored the president's personal interest in formal planning. Current planning efforts at nine campuses could be traced specifically to presidential initiatives. In particular, new presidents tended to begin their tenure by devoting considerable attention to formal planning activities even though they often were not very specific about their reasons for initiating or revising formal planning on their campuses.

The planning activities employed by site visit campuses were highly varied both in scope and process. They ranged from a presidential effort to develop a "strategic vision" for the year 2010 to comprehensive processes designed to produce detailed annual operational plans to guide budget allocations. The extent of constituency involvement also varied considerably. While some campuses had established broadly representative committees, involving members recommended by campus constituencies, others relied heavily on the president's staff to coordinate planning efforts and to make major planning decisions using information forwarded through existing administrative structures. Additionally, particularly when planning appeared to be basically geared to meeting Title III or state agency demands, institutional research officers or other administrators independently developed planning documents that typically appeared to be largely ignored in campus decision-making.

In general, interviewees judged planning approaches that were integrated with normal campus decision processes to be more satisfactory than those using broadly based committees and operating apart from traditional decision makers and governance bodies. Several campuses, which had experimented with assigning primary responsibilities to a representative committee, now were trying to integrate planning into normal campus structures and processes.

In sum, despite extensive efforts site visit campuses devoted to various formal planning processes at various times over the past five to ten years, the majority of those interviewed in all types of positions appeared quite dissatisfied with their outcomes. Many campuses had tried various processes for one to three years, then dropped them because of perceptions that they were not worth their costs or revised them when a new president arrived. Process benefits of planning were mentioned far more frequently than substantive benefits. For example, many interviewees said that, for the first time, they learned what other areas on their campus were doing. Furthermore, in institutions initiating new processes at the time of the site visit, interviewees typically expressed considerable skepticism about the durability and outcomes of these processes. As one institutional research director suggested, campuses "periodically do formal planning under different guises." Nevertheless, the interviewees generally were not ready to abandon efforts to deliberately plan. Generally, they appeared to be still seeking solutions to the problems and dilemmas frustrating planning efforts.

USE OF DATA IN PLANNING

Most recommended approaches to formal planning emphasize the importance of using good data on external trends and internal conditions. However, there appeared to be a serious lack of such data, and only minimal capability to develop it, at many site visit institutions. Only five of the 16 campuses appeared to have good data on their external environment and internal operations. Each of these five campuses had reasonably well established data collection and analysis units, including two particularly well staffed and respected institutional research offices (one at a community college and one at a research university) and one well-staffed office with a somewhat broader range of responsibilities. Among the 11 campuses which appeared to have less than adequate data for planning, six had, or were developing, at least some institutional research capabilities, including four campuses with new or minimally staffed institutional research offices and two which specifically assigned some data collection and analysis responsibilities to other administrators. The other five site visit institutions had very minimal data for use in planning and no staff clearly assigned to the institutional research function. However, senior administrators at three campuses in this category indicated concern about the lack of data and reported that they were hoping to hire an institutional research officer in the near future.

PLANNING REALITIES

An initial list of important factors affecting campus planning practices was developed from information obtained during site visits. These factors illustrate some realities confronting campus planning and suggest some implications for practice.

Achieving Legitimacy and Trust Among Participants

An issue all campuses faced was maintaining the legitimacy of the planning process and the credibility of its leadership with various constituencies. Presidents wrestled with the fear of losing control of planning processes. Nevertheless, they often preferred to let others lead campus planning efforts so they could maintain a more neutral role in resolving disputes. Thus, they could avoid becoming so identified with a position that their room for maneuver and compromise was limited.

The degree to which faculty, administrators, trustees and external agencies had trust and confidence in one another varied considerably among the 16 campuses. However, there appeared to be a considerable degree of distrust between administrators and faculty at all campuses. Improper motives frequently were ascribed to both administrative and faculty initiatives and rumors about these motives flourished. Establishing trust and confidence appeared to be a very slow process and could be destroyed rapidly by a single negative incident. Frequently, communication to faculty about circumstances confronting the campus, as well as communication among faculty, appeared to be weak. This contributed to low levels of trust which, in turn, negatively affected campus planning efforts. One interviewee commented that, "if it weren't for lack of faith in people, strategic planning would work." Suspicion appeared to generate problems in reaching consensus, restricted the ability of campus leaders to act on various issues, and caused excessive paperwork as attempts were made to justify actions and create records for defensive purposes.

The practice of placing faculty periodically in positions where they had to deal with campus-wide issues seemed to contribute to a higher levels of trust. One campuses had a policy of generally selecting its high level administrators from among its faculty. Additionally, frequent communications about crucial issues and informal discussions among key campus leaders may be far more useful than formal planning meetings and documents.

System and state-level planning requirements placed on campuses frequently appeared to stem from distrust of campus motives and actions. Such requirements sometimes might have been intended to encourage campuses to examine their policies and directions, and then reveal them to central policy makers. However, at campuses they seemed to be largely "make work" efforts and, generally, appeared to have little affect on campus actions and decisions. Their primary usefulness seemed to be in assuring the external agency that the campus knew what it was doing and was well managed, *i.e.* it had plans. The costs to campuses of such a lack of trust and confidence among the parties involved, including system level and state level officials, appears very high and warrants further investigation.

The Political Character of Planning

Some interviewees appeared to see planning as a "rational" means to eliminate or lessen "political" influences on campus decisions. Planning was seen as a way to overcome the effects of individuals and units pursuing their narrow self-interests and excessively protecting their own "turfs". Decisions presumably would be made on the basis of objective data, and the "merits" of issues, with decision-making occurring primarily through traditional hierarchial structures.

These views seem to ignore the realities of campus governance. Decision power on a campus is quite dispersed. Faculty have the major role in academic decisions while administrators power primarily stems from budget control. Various units on campuses have considerable autonomy, based on norms for organizations composed of professionals. Consequently, decisions typically involve reconciling many values and interests in a democratic fashion. This diffusion of power on a campus does not lend itself to the imposition, without compromise and accommodation, of the views of any one party. Planning appears to be one of the ingredients in this political process, not a means to eliminate or lessen significantly its effects. One interviewee noted: "Issue avoidance and lack of follow-up cannot be fixed by planning."

Virtually all faculty and department chairs viewed planning as a means to obtain more resources for their units. They related the success or failure of planning efforts to budget increases. Since most unit budgets at the site visit campuses generally increased only incrementally each year, often to compensate for inflation, department members generally believed formal campus-wide planning, as they had experienced it, was largely ineffective and costly.

Administrators, on the other hand, were upset with unit plans that were "wish lists", unconstrained by realistic expectations of available resources. Administrators at several campuses were wrestling with how to encourage unit creativity without creating unrealistic expectations that could result in disillusionment with the planning process.

Campus leaders who dislike dealing with conflicting campus self-interests will not find relief through "rational" planning. Clearly planning is not a means to overcome the politics of campus decision making. Political conflict is a part of planning, not something planning overcomes. Plans are outcomes of a campus political process rather than schemes mandated by central policy makers based on "objective" facts and analysis. Sophisticated analysis improves the quality of planning but does so as an ingredient in the politics of choice, not as an unambiguous blueprint for "rational" action.

The Character of Planning Documents

Campus mission and role statements appeared to be essentially political documents used primarily to avoid restricting potential campus roles and interests. They did not appear to be attempts to narrowly define the character of campuses, and their programs, in order to provide clear guidance for operational decisions. Comprehensive campus planning documents most commonly were said to have ended up "on the shelf" while short-range operational documents typically did not address major strategic choices.

Dean Rusk's (Washington Post, 1988) comment on the role of party platforms in guiding foreign policy seems equally applicable to campus planning documents:

> "I've attended hundreds of meetings at which decisions had to be made, ...and I have never, never heard anyone ask: 'Well, gee, let's get out the party platform and look at what it has to say.' Not once." (p. C2)

Producing lengthy planning documents often may not be useful. Preparing planning documents takes a great deal of time and resources; yet these documents appear to have a short "shelf life". Many persons involved in planning observed that its main value resulted from insights participants gained during the process, not from the documents produced. A careful weighing is needed of documentation's benefits against its costs.

Devoting a great deal of attention to very detailed operational plans much in advance of budget formulation processes does not appear to be particularly useful. The politics of the budgetary process, so ably described by Wildavsky (1964), preclude following a clearly defined recipe worked out in advance. New circumstances emerge continuously and important considerations often reveal themselves only in the course of reacting to particular resource allocation recommendations. Considerable flexibility is needed to adjust budgets to cope with unforeseen circumstances.

The Uncertainty of Future Events

Those interviewed expressed considerable support for formal planning efforts when first queried. However, as they reflected further, they began to note the great difficulties involved in predicting future conditions affecting the campus. These uncertainties, they suggested, made planning very difficult. Typical comments were: "What comes up is as important as what is planned. That's life."; "We react to future developments, that is the norm."; "We engage in crisis management."; and "The provost is a problem solver, not a planner."

Given these interpretations of their circumstances, interviewees placed considerable importance on being able to react promptly to emerging conditions. They wanted to maintain the ability to implement new ideas without lengthy delays for amendments to plans, or for justifying departures from earlier directions. Generally, interviewees seemed to be seeking a balance between formally examining future directions and maintaining the flexibility to react quickly to new opportunities or problems. Plans sometimes were seen as an impediment to effective entrepreneurship.

Stability of Planning Processes

At most campuses visited, planning processes survived for only one to three cycles before being abandoned or largely revamped. Since comprehensive campus planning efforts were so costly in time, effort and political capital; many interviewees suggested that they should take place no oftener than every three or more years. Most of those who had recently been through a major planning cycle did not expect to repeat it in the near future. Those most enthusiastic about planning frequently were persons who had not been through a process or were new to the campus.

These findings strongly suggest that major planning processes should not be undertaken annually. Some interviewees recommended they take place no more often than every five years.

CONCLUSIONS

This preliminary analysis of interview information suggests that many prescriptions in planning literature, including prescriptions about the role of data, are inconsistent with campus decision process realities. The costs of planning and data collection need to be carefully weighed against presumed benefits. While the desirability of reducing uncertainty through formal planning, based on "rational" analysis, appears compelling, future events are highly unpredictable. Careful data collection and analysis are useful in clarifying many issues but they must be integrated into planning processes that recognize the political realities of the academy. Furthermore, individuals involved in developing and disseminating data for campus planning should be cognizant of the frequent miscommunications and distrust existing on many campuses. They should make concerted efforts to ensure various constituencies understand and trust their data and fully recognize its implications and limitations.

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ASSESSMENT AT ALBANY

THE IMPACT OF COLLEGE EXPERIENCES ON STUDENTS AND ALUMNI

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ABSTRACT

This presentation illustrates the ways Albany is using its Assessment Data Bases. The results of several outcomes studies are presented as examples: studies of freshmen, transfer and minority student sub-populations; freshman to senior year changes in student values, attitudes, and intellectual growth differentiated by major field of study; and alumni satisfaction, success, and gift giving patterns.

INTRODUCTION AND CONCEPTUAL FRAMEWORK

"Assessment" is a term being used across the nation to describe multimethod techniques for evaluating the outcomes of the educational process. Assessment embraces everything from data on attrition and graduation rates to measurement of student learning and growth, from Accreditation Reviews to faculty program evaluation, from student satisfaction ratings to measurement to knowledge and skill acquisition.

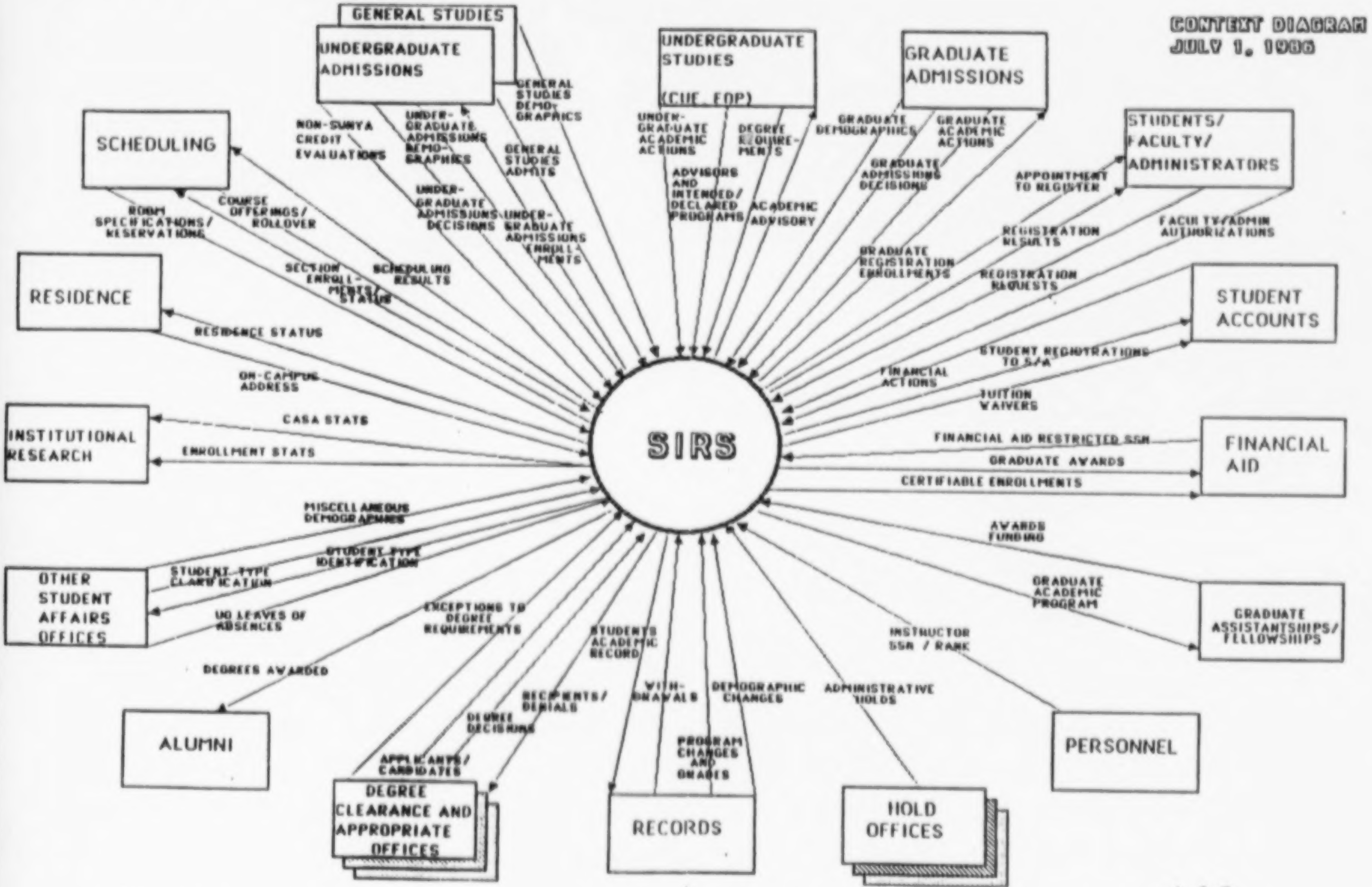
Since the mid 1970's, the University at Albany has been among the nation's leading campuses in the area of self assessment. **Program evaluation and assessment have been managerially linked to the University's planning, budgeting, and priority-setting activities** ever since the Reports of the "Select Committee on Academic Program Priorities" (1975) and the "Task Force on Priorities and Resources" (1976) led to the first formal Statement of Mission (1977). Building on this Mission Statement, the President has, in each year since 1978, issued "Programs and Priorities" which marks the Culmination of the annual planning process on the campus.

In 1980, the University at Albany used its Reaccreditation by the Middle States Association as an opportunity to focus on assessment. The 1980 Self-Study document was a comprehensive attempt to summarize and organize the evaluation activities of the campus and to establish a framework for our on-going assessment of educational and administrative programs.

In 1988 the University completed a five year project which established a new student information and records system (SIRS). **The key components of SIRS are shown in Figure 1. Components from Admissions, SIRS, and Alumni Systems, in particular, provide the campus with on-line databases which the Office of Institutional Research, among others, is using to provide information and analysis.**

Assessment Activities at Albany are being guided by the Outcomes Model in Figure 2 which is a hybrid of widely recognized research and theory in the field. The value of a model is that it guides both the formulation of research questions and measurement design. The conceptual framework for our efforts is provided by the literature which views the outcomes of the college experience as influenced by both pre-college and college factors. The

FIGURE 1

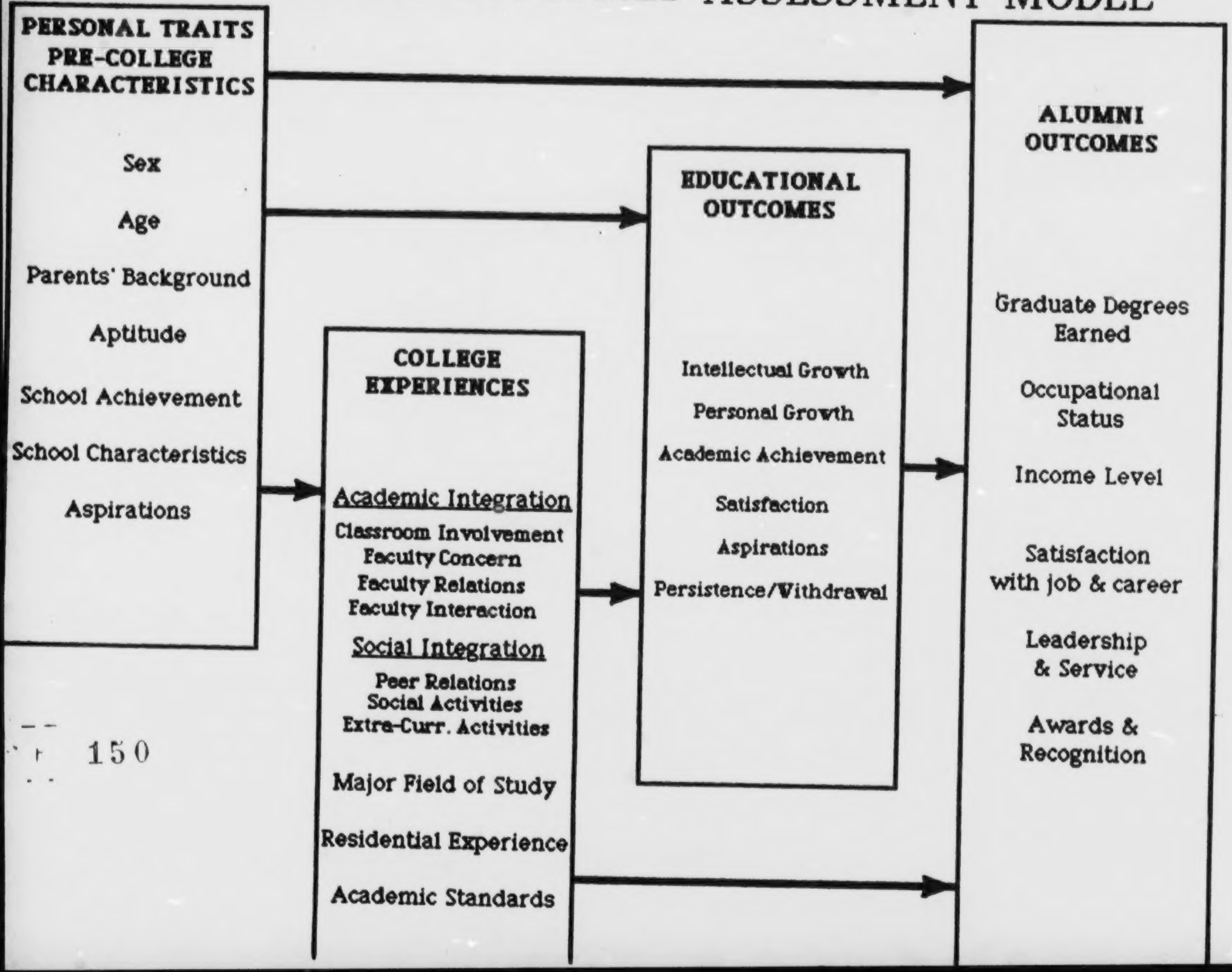


CONTEXT DIAGRAM
JULY 1, 1986

SIRS
GENERAL STUDIES
UNDERGRADUATE ADMISSIONS
UNDERGRADUATE STUDIES (CUE, EOP)
GRADUATE ADMISSIONS
STUDENTS/ FACULTY/ ADMINISTRATORS
SCHEDULING
RESIDENCE
INSTITUTIONAL RESEARCH
OTHER STUDENT AFFAIRS OFFICES
ALUMNI
DEGREE CLEARANCE AND APPROPRIATE OFFICES
RECORDS
HOLD OFFICES
PERSONNEL
GRADUATE ASSISTANTSHIPS/ FELLOWSHIPS
FINANCIAL AID
STUDENT ACCOUNTS
GENERAL STUDIES DEMOGRAPHICS
NON-SUNYA CREDIT EVALUATIONS
UNDERGRADUATE ADMISSIONS DEMOGRAPHICS
GENERAL STUDIES ADMITS
UNDERGRADUATE ADMISSIONS DECISIONS
UNDERGRADUATE ADMISSIONS ENROLLMENTS
UNDERGRADUATE ACADEMIC ACTIONS
DEGREE REQUIREMENTS
ADVISORS AND INTENDED/ DECLARED PROGRAMS
ACADEMIC ADVISORY
GRADUATE DEMOGRAPHICS
GRADUATE ACADEMIC ACTIONS
GRADUATE ADMISSIONS DECISIONS
GRADUATE REGISTRATION ENROLLMENTS
APPOINTMENT TO REGISTER
REGISTRATION RESULTS
FACULTY/ADMIN AUTHORIZATIONS
REGISTRATION REQUESTS
ROOM SPECIFICATIONS/ RESERVATIONS
COURSE OFFERINGS/ ROLLOVER
SECTION ENROLLMENTS/ STATUS
SCHEDULING RESULTS
RESIDENCE STATUS
ON-CAMPUS ADDRESS
CASA STATS
ENROLLMENT STATS
STUDENT REGISTRATIONS TO S/A
FINANCIAL ACTIONS
TUITION WAIVERS
FINANCIAL AID RESTRICTED SSN
GRADUATE AWARDS
CERTIFIABLE ENROLLMENTS
AWARDS FUNDING
GRADUATE ACADEMIC PROGRAM
INSTRUCTOR SSN / RANK
MISCELLANEOUS DEMOGRAPHICS
STUDENT TYPE CLARIFICATION
STUDENT TYPE IDENTIFICATION
UG LEAVES OF ABSENCES
EXCEPTIONS TO DEGREE REQUIREMENTS
DEGREES AWARDED
STUDENTS ACADEMIC RECORD
RECIPIENTS/ DENIALS
DEGREE DECISIONS
APPLICANTS/ CANDIDATES
WITHDRAWALS
DEMOGRAPHIC CHANGES
PROGRAM CHANGES AND GRADES
ADMINISTRATIVE HOLDS

FIGURE 2

ALBANY OUTCOMES ASSESSMENT MODEL


PERSONAL TRAITS
PRE-COLLEGE CHARACTERISTICS
Sex
Age
Parents' Background
Aptitude
School Achievement
School Characteristics
Aspirations
COLLEGE EXPERIENCES
Academic Integration
Classroom Involvement
Faculty Concern
Faculty Relations
Faculty Interaction
Social Integration
Peer Relations
Social Activities
Extra-Curr. Activities
Major Field of Study
Residential Experience
Academic Standards
EDUCATIONAL OUTCOMES
Intellectual Growth
Personal Growth
Academic Achievement
Satisfaction
Aspirations
Persistence/Withdrawal
ALUMNI OUTCOMES
Graduate Degrees Earned
Occupational Status
Income Level
Satisfaction with job & career
Leadership & Service
Awards & Recognition

longitudinal impacts of colleges and universities on their students have been the focus of much discussion and study (Astin, 1977; Chickering, 1969; Feldman and Newcomb, 1969; Pascarella, 1985). Building especially on the theoretical contributions by Chickering (1969) and Tinto (1975), Terenzini and Pascarella and their associates have developed instruments and models which explain the relative strengths of pre-college characteristics and campus experiences on student learning and growth. In addition, another branch of the literature views social status and occupational achievement as products of both personal traits and life experiences (Blau and Duncan, 1967; Sewell and Hauser, 1975). Several authors have linked the role of schooling in general and college education in particular to subsequent socioeconomic attainment (Bowen, 1977; Pace, 1979). Smart and Pascarella (1986) developed a path model which assesses the contributions of various pre-college characteristics, institutional characteristics, and campus experiences to the socioeconomic achievements of a 1980 population who entered college in 1971.

In the Albany model, educational outcomes (such as intellectual growth, academic achievement, satisfaction, and persistence) are products of a variety of student traits, pre-college characteristics, and college experiences. Likewise, Alumni Outcomes (such as advanced degrees, occupational status, and career satisfaction) result from a variety of earlier experiences, some of which derive from the student's background, and others of which result from the influences and outcomes of an education at Albany.

Some of the theoretical frameworks and longitudinal models have guided research which studies populations of students **ACROSS** institutions. However, campus managers in general, and institutional research officers in particular, often find themselves in the position of wanting to know more about the differential impacts of programs and policies **WITHIN** a particular campus. This is especially true at a complex university containing a diversity of student subcultures and academic enclaves.

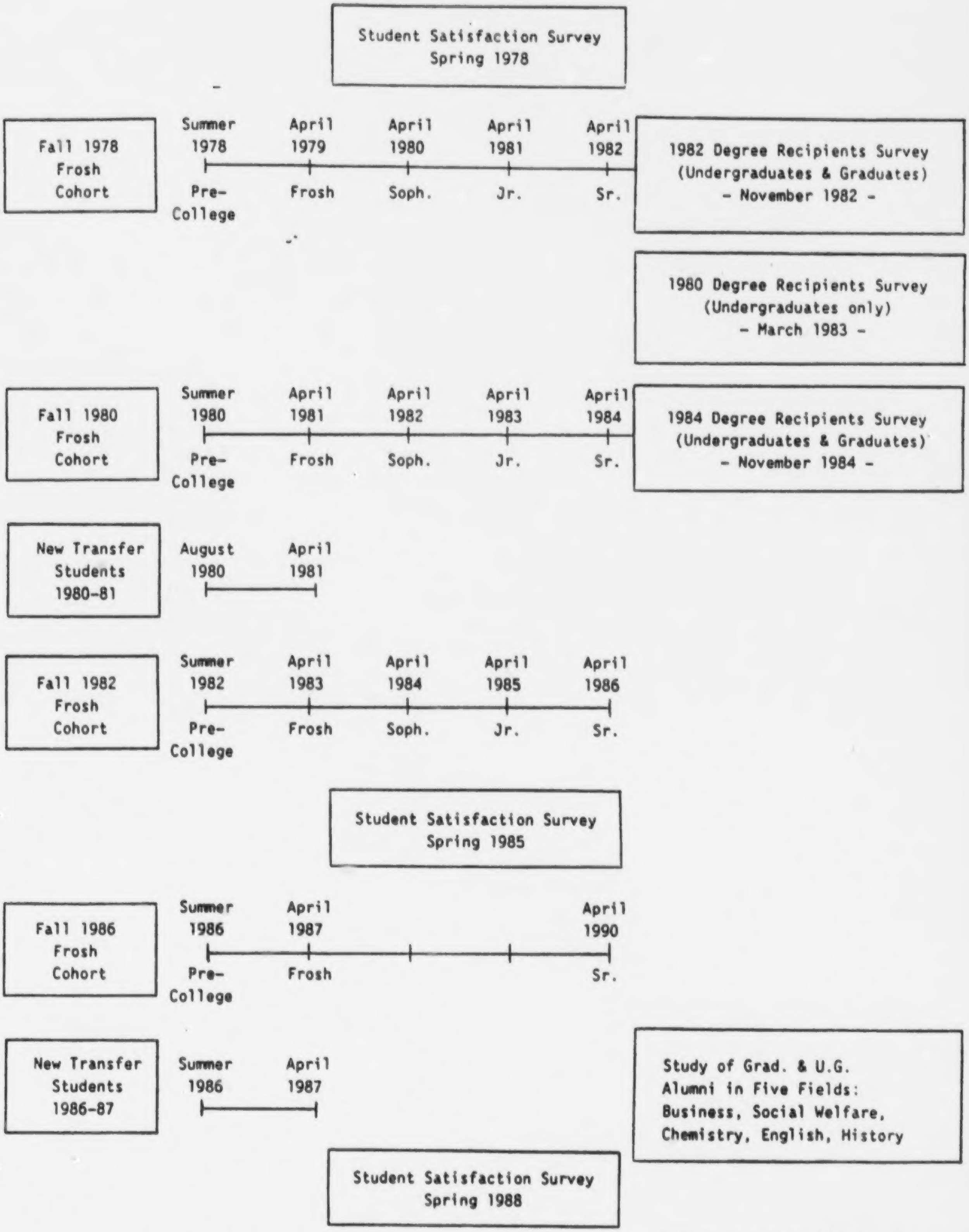
Consistent with literature on academic organizations, we expect that the influence of the academic department plays an important role in shaping student preparedness. If so, this should be visible in the differential educational outcomes of students and in the achievements of graduates. It is also expected that the influence of the academic major may even outweigh the influences of some of the campus-wide experiences reported by the students. In any case, our research is now giving greater attention to various "within campus" influences on student and alumni outcomes. Our databases are now getting large enough to permit even more departmental analysis in the future.

Figure 3 gives an overview of the assessment databases at Albany. We have assembled data on a number of different cohorts including freshman and transfers, seniors and alumni, traditional students and minorities. In 1978, Patrick Terenzini began a series of studies which investigated the impact of an Albany education on its undergraduates. By tracking several cohorts of entering freshmen and surveying them each year, Terenzini and the rest of us at Albany have been able to document the personal and intellectual growth of our students and to identify the sources of that growth. The freshman to senior year surveys were supplemented by surveys of recent graduates. In addition, we have undertaken a similar survey followup of entering transfer students, and have participated in periodic administrations of the ACT Student Opinion Survey. Our dissatisfaction with the earlier surveys of recent graduates led us in 1987 to carry out an intensive followup of alumni in five fields of study who graduated 5, 10, and 15 years earlier.

With both Kellogg Foundation and University support, the Office of Institutional Research has since 1980 conducted a series of outcomes studies resulting in a series of research reports:

FIGURE 3

EXISTING AND PLANNED STUDENT OUTCOMES DATA SETS
AT THE STATE UNIVERSITY OF NEW YORK AT ALBANY


Student Satisfaction Survey
Spring 1978
Fall 1978
Frosh
Cohort
Summer
1978
April
1979
April
1980
April
1981
April
1982
Pre-
College
Frosh
Soph.
Jr.
Sr.
1982 Degree Recipients Survey
(Undergraduates & Graduates)
- November 1982 -
1980 Degree Recipients Survey
(Undergraduates only)
- March 1983 -
Fall 1980
Frosh
Cohort
Summer
1980
April
1981
April
1982
April
1983
April
1984
Pre-
College
Frosh
Soph.
Jr.
Sr.
1984 Degree Recipients Survey
(Undergraduates & Graduates)
- November 1984 -
New Transfer
Students
1980-81
August
1980
April
1981
Fall 1982
Frosh
Cohort
Summer
1982
April
1983
April
1984
April
1985
April
1986
Pre-
College
Frosh
Soph.
Jr.
Sr.
Student Satisfaction Survey
Spring 1985
Fall 1986
Frosh
Cohort
Summer
1986
April
1987
April
1990
Pre-
College
Frosh
Sr.
New Transfer
Students
1986-87
Summer
1986
April
1987
Study of Grad. & U.G.
Alumni in Five Fields:
Business, Social Welfare,
Chemistry, English, History
Student Satisfaction Survey
Spring 1988

Office of I.R./1/29/88-1429I

Research Report No. 1: The Frequency and Nature of Informal Student contact with Faculty

Research Report No. 2: Changes in Students' Perceptions of the Importance of Three Major Goals of College

Research Report No. 3: SUNY-Albany Undergraduates: Who Are They? What Happens to Them Here? Where Do They Go?

Research Report No. 4: An Assessment of the Impact of General Education Requirements on Freshmen

Research Report No. 5: A Study of Graduating Seniors at Albany Comparing Those Who Entered the University as Freshmen with those Who Entered as Transfer Students

Research Report No. 6: Assessing the Impact of the Undergraduate General Education Program

Research Report No. 7: Retention and Graduation Rates of SUNY-Albany Under-Graduates

Research Report No. 8: Albany Graduates from Five Fields of Study: A 1987 Description and Assessment

In addition, we have authored over 20 conference papers and journal articles over the years. A list of these can be obtained from the Office of Institutional Research at Albany.

During the Panel Session, the presenters summarized the results from these studies and displayed overhead transparencies which supported the key findings.

KEY FINDINGS FROM THE FRESHMAN TO SENIOR YEAR COHORT STUDIES

- There are significant freshman to senior year increases in the highest degree expected by the students.
- During their four years, students reported increases in the importance of Liberal Education and decreases in the importance of Career Skills
- Large differences are found among Schools & Colleges in student attitudes toward Liberal Education and Careerism
- Consistent Intellectual and Personal Growth is reported from the Freshman to the Senior year for each Cohort

- Intellectual Growth Is Unrelated to Pre-College Traits and Achievement, but significantly associated with Campus Experiences, especially Academic Experiences

- Personal Growth Is Unrelated to Pre-College Traits and Achievement, but significantly associated with Campus Experiences especially Peer Relations and Activities

- Academic Integration is more influential in the growth of Freshmen and Sophomores and first-year Transfer Students. Social Integration is more influential for Juniors and Seniors.

- Comparing Seniors who enter as Transfer Students with those who enter as Freshmen, we find that their differences lie mostly outside the classroom. The Transfer Seniors report having academic experiences and intellectual growth comparable to that of native seniors. Transfers appear to be less socially connected to their peers and more vocationally oriented in terms of their educational goals, but in most other important respects (including academic performance and future plans), there are no statistically reliable differences between the two groups, even though they enter Albany possessing markedly different backgrounds and experiences.

- We found consistent increases in Satisfaction Levels from Freshmen to Seniors to Alumni

KEY FINDINGS FROM OUR RECENT SERIES OF ALUMNI STUDIES

- Most Alumni start out living in New York State and only gradually leave the State with the passage of time.

- There are significant differences in alumni outcomes, such as subsequent degrees earned and income levels, by major field of study.

- Graduates from most departments report high levels of satisfaction with the extrinsic and intrinsic rewards of their careers. The most highly paid are the most extrinsically satisfied, the lowest paid are the most intrinsically satisfied.

- The overwhelming majority of Alumni in all fields agreed that there are twelve abilities and skills which are highly important to success in life. In most cases the Albany experience enhanced those skills only moderately.

- The correlation between Albany GPA and five subsequent alumni outcomes is relatively low in most cases, especially for English majors. Chemistry alumni showed significant correlations between GPA and three of the five outcomes.

- When asked to grade their Albany experiences, most Alumni give higher marks to the quality of instruction and to the quality of student life, than to academic advisement. These assessments across majors are more congruent than expected.

- When asked, "If you had it to do all over again,..." most Alumni would attend Albany again and select the same major and same career. Recent Alumni are much more likely to do so, however, than earlier alumni.

KEY FINDINGS FROM THE ATTRITION/RETENTION STUDIES

- Using both SUNY and National comparisons, Albany has one of the highest rates of retention and one of the lowest rates of attrition.

- The attrition/retention statistics for all undergraduates tend to mask large differences among sub-groups. EOP populations have 10% to 20% lower retention than Non-EOP populations; and Minorities have a 10-15% lower retention than Whites. The highest attrition rate for Whites occurs during the first year, and the highest rate for Minorities occurs during the second. Rates for Men and Women are quite similar.

- Minority and White Students who leave the University exhibit some characteristics in common, and some which are different. Successful White and Minority Students both exhibit ambitious life and career goals. The two groups differ, however, in their attitudes about classroom learning, about foreign languages and cultures, and about social concerns.

- Transfer Students also exhibit variable Attrition/Retention patterns depending upon the Sending Institution. Transfer Students from some Two-Year Campuses have consistently higher Retention than those from others.

Institutional Images: Factors Affecting the Student Enrollment Decision Process

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Introduction

Institutional administrators must be certain that institutional goals are parsimonious in nature and that they reflect an image concurrent with the institution's stated mission. For example, a typical institutional goal is to enhance their student body by recruiting students with high academic ability. However, this goal may conflict with another institutional goal of recruiting students who may be less academically qualified but who are considered consistent with the institutional mission (i.e. first generational college students, academically challenged students, low family income students, and so forth). Conflicting institutional goals may result in a mixed image being sent to the educational marketplace and a potential lowering of enrollment yields.

This paper addresses the issue of institutional images as they effect the student enrollment decision process. How an institution presents itself to prospective consumers may affect the way consumers perceive the institution. It is my supposition that an institution may articulate positive institutional goals; however, these same institutional goals may be self-defeating as they find their way to the educational marketplace in terms of a mixed institutional image. This study looks at three salient institutional images, academic quality, institutional geographic location and social/cultural activities as they impact upon the student enrollment decision process. Two indicator variables, academic ability and family income level, are analyzed as to their effect on the above three institutional images and to their subsequent impact on an institution's enrollment yield.

Recent research demonstrates that students' perceptions of academic quality are often dependent upon their perceptions of price. Bordigan (1987) finds that there is a positive statistical relationship between prospective students' perceptions of academic quality and price. This finding translates into the perception that high price equates, to some extent, with academic quality. In a similar vein, Lay and Bradley (1981) find that specific institutions, although ranking high in terms of academic quality and prestige, lose potential applicants who perceive the price of attending these universities as too high. This applicant enrollment decision is made despite the fact that these students may be eligible for large amounts of financial aid. To further buttress this latter point, Leslie and Brinkman (1987), in their comprehensive review of institutional pricing strategies, find that students are more sensitive to tuition increases than to subsequent increases in financial aid.

An educational "catch-22" situation arises when institutions address the relationship between price and academic quality. Institutions which pride themselves on providing students with a low cost, quality education may impede their recruitment process by actively recruiting high academic ability students. These students may not be receptive to an institution because of its low pricing structure. Concurrently, by actively recruiting high academic ability students an institution may be impeding the recruitment of students from low income families with limited academic abilities. This scenario occurs as financial aid dollars are expended to recruit and retain higher academically qualified students.

Methodology

This study was conducted at a private commuter school located in a vibrant urban environment. This institution enrolls approximately 5,500 students of which 2,900 are undergraduates. The institution's mission statement articulates a need to provide high quality educational opportunities to a wide range of students in order that they may realize greater social, economic and professional goals.

The data for this study result from a survey of freshmen students who were admitted to this institution for the Fall, 1987 semester. Approximately 60 percent of all accepted applicants completed and returned this survey. The survey instrument asked each student to evaluate this institution, on twenty characteristics, with other institutions to which they considered attending. The characteristics evaluated ranged from 'quality of faculty' and 'costs' to 'ability to live at home' and 'campus attractiveness'.

To facilitate understanding of the student responses a factor analysis was conducted on these characteristics. Using a varimax method (a method which attempts to maximize the variance of factor loadings for each factor) and assuming an orthogonal relationship, three primary factors emerge from these twenty characteristics. Table 1 shows the factor loadings for each characteristic. Three image factors emerge and are labelled 'Academic Quality Image', "Geographic Location Image" and 'Social/Cultural Image' respectively.

Two additional data elements, academic ability and family income level, are used as indicator variables in this analysis. Students with an SAT score of 900+ or a self-reported GPA of 3.00+ are categorized as 'High Academic Ability' students. Students not meeting these criteria are

Table 1: Rotated Three-Factor Matrix of Twenty Image Characteristics

Characteristic	Academic Quality Image*	Geographic Location Image*	Social/ Cultural Image*
Quality of Faculty	0.779	0.125	0.129
Quality of Major	0.718	0.191	0.144
Academic Reputation	0.661	0.080	0.245
Variety of Courses	0.657	0.160	0.214
Undergraduate Emphasis	0.643	0.240	0.174
Access to Faculty	0.637	0.219	0.074
Academic Facilities	0.557	0.109	0.392
Ease of Getting Home	0.095	0.762	0.031
Ability to Live at Home	0.077	0.753	0.109
Can Attend With Friends	0.121	0.654	0.252
Part of Country	0.189	0.558	0.293
Similar Student Type	0.309	0.512	0.314
Surroundings	0.248	0.509	0.294
Cost of Attendance	0.207	0.475	-0.141
Religious Activities	0.016	0.060	0.663
Campus Attractiveness	0.317	0.131	0.625
Extracurricular Oppt.	0.263	0.201	0.621
On-Campus Housing	0.135	-0.026	0.601
Quality of Social Life	0.233	0.282	0.581
Off-Campus Activities	0.206	0.289	0.556

* Figures represent each characteristic individual factor loading on each factor.

Note: Sample size = 576 due to pair-wise deletion.

classified as 'Low Academic Ability' students. Similarly, students with a self-reported family income of >=30,000 dollars are classified as 'High Family Income' students while those not meeting this criterion are classified as 'Low Family Income' students. A dichotomous variable is created based on a student's enrollment status (enrolled=1 non-enrolled=0). This study employs a multivariate regression model which measures the effect of five independent variables (Academic Ability, Family Income, Academic Quality Image, Geographic Location Image and Social/Cultural Image) on the dependent variable, enrollment status. The following propositions are tested to measure the effects of institutional images on the student enrollment decision process.

Propositions:

Enrolling Students will have a more positive image of an institution's academic quality than will non-enrolling students.

Enrolling Students will have a more positive image of an institution's geographic location than will non-enrolling students.

Enrolling Students will have a more positive image of an institution's social/cultural activities than will non-enrolling students.

Academic Ability and perceptions of three institutional images will interact so as to affect a student's enrollment status.

Family Income Level and perceptions of three institutional images will interact so as to affect a student's enrollment status.

Results

For the above propositions each institutional image and indicator variable is tested for both its individual and interactive effect on a student's enrollment status. Table 2 displays the results from a preliminary t-test analysis of three institutional images by enrollment status. Two student sub-groups are tested (High and Low Academic Ability students and High and Low Family Income students) for differences based on their enrollment status.

Table 2 reveals preliminary evidence that two institutional images have a significant impact upon the enrollment decision process. Enrolling students evaluate this institution more positively than do non-enrolling students on images relating to 'Academic Quality' and 'Geographic Location'. These findings hold true when controlling for academic ability and family income level. Enrolling students, with a self-reported low family income, evaluate the social/cultural environment more positively than do their non-enrolling counterparts. (Note: the lower the mean score rating the more positive the institutional image).

When focusing strictly on 'Family Income Level' and 'Academic Ability' these findings show that students with 'Low Academic Ability' evaluate

Table 2: T-Test Analysis of Three Institutional Images Mean Score Ratings by Enrollment Status

Variable	Type	Academic Quality Image	Geographic Location Image	Social/ Cultural Image	N
Controlling For Family Income					
Low Acad. Ability	Enrolled	−0.3053***	−0.2297**	−0.1431	140
	N-Enrolled	0.1062	0.1208	−0.0005	86
High Acad. Ability	Enrolled	−0.2564***	−0.1839**	0.0439	87
	N-Enrolled	0.2167	0.1268	0.0754	108
Controlling For Family Income					
Low Family Income	Enrolled	−0.2853***	−0.2526**	−0.1464	83
	N-Enrolled	0.1463	0.1320	−0.1149	69
High Family Income	Enrolled	−0.2152***	−0.1621*	−0.0089*	109
	N-Enrolled	0.1860	0.1026	0.1934	102
Academic Ability	High	0.0056*	−0.0118	−0.0888*	226
	Low	−0.1488	−0.0963	0.0614	195
Family Income	High	−0.0213	−0.0780	−0.1321*	211
	Low	−0.0894	−0.3414**	−0.0888	152
Enrolled Status	Enrolled	−0.2866**	−0.2121**	−0.0714	227
	N-Enrolled	0.1677	0.1241	0.0418	194

* p <.05, ** p <.005 and *** p <.0001.

Note: Negative numbers represent a positive response.

this institution more favorably in regard to its academic quality than do students with self-reported 'High Family Income' levels. Concurrently, students with 'Low Family Income' levels evaluate this institution's geographic location more favorably than do students reporting 'High Family Income' levels. Conversely, 'High Family Income' students evaluate this institution more positively than do their 'Low Family Income' counterparts. These findings indicate that an institution's image can impact upon the student enrollment decision process. Furthermore, these results reveal that institutional images are interpreted differently by these two different accepted applicant sub-groups.

Table 3, below, displays the Pearson correlation coefficients among the six variables involved in this analysis. This analysis shows very little relationship among the three institutional image items. Conversely, these three images do correlate significantly with enrollment status.

Table 3: Pearson's Correlation Coefficients, Means, and Standard Deviations for Three Image Variables, Family Income, Academic Ability and Enrollment Status+

Code	Variable	(E)	(FI)	(AA)	(AQI)	(LI)	Mean/Std.
E	Enrolled Status	1.000 (0.000)					0.549*
FI	Family Income	0.005 (0.916)	1.000 (0.000)				0.597*
AA	Academic Ability	-0.186 (0.001)	0.113 (0.013)	1.000 (0.000)			0.444
AQI	Academic Quality Image	-0.296 (0.001)	0.046 (0.380)	0.101 (0.039)	1.000 (0.000)		-0.077 (0.766)
LI	Location Image	-0.221 (0.001)	0.029 (0.583)	0.056 (0.255)	0.010 (0.837)	1.000 (0.000)	-0.057 (0.759)
SCI	Social/Cultural Image	-0.076 (0.120)	0.150 (0.004)	0.101 (0.039)	-0.039 (0.430)	0.010 (0.833)	-0.019 (0.744)

* reflect proportions rather than mean scores.
+ the number in parentheses reflects the correlation coefficient probability.

Note: Sample sizes vary due to pairwise deletion of missing cases.

Table 4 reports the degree of interaction between a student's enrollment status and five independent variables. This table shows that these five independent variables explain over 23% of the variance in enrollment status.

Table 4: Enrollment Status as a Function of Three Institutional Images, Family Income and Academic Ability Using Regression Analysis

Independent Variable	Regression Coefficient	Standard Error	T-test
Intercept	0.581	0.051	11.510***
AA Academic Ability	-0.170	0.082	-2.080*
FI Family Income Level	-0.018	0.069	-0.270
AQI Academic Quality Image	-0.213	0.065	-3.170**
LI Geographic Loc. Image	-0.153	0.066	-2.320*
SCI Social/Cultural Image	0.019	0.070	0.280
First Order Interactions			
(AA * FI)	0.086	0.104	0.820
(AA * AQI)	-0.200	0.128	-1.560
(AA * LI)	-0.057	0.108	-0.530
(AA * SCI)	-0.201	0.154	-1.300
(FI * AQI)	0.043	0.105	0.410
(FI * LI)	0.020	0.093	0.210
(FI * SCI)	-0.209	0.103	-2.210*
(AQI * LI)	-0.145	0.099	-1.460
(AQI * SCI)	-0.312	0.084	-3.730***
(LI * SCI)	0.043	0.079	0.550

R-Squared = 0.233

* $p<.05$
** $p<.005$
*** $p<.0001$

The five independent variables directly explain 15% of the variance in a student's enrollment status. The interaction among these five variables explains an additional 8% of the variance in enrollment status. Three significant first-order effects are identified. Students 'Academic Ability' level and their image of this institution's 'Academic Quality' interact to effect their enrollment decision. Similarly,

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interaction effects are seen between the 'Family Income' and 'Geographic Location' images and images related to 'Academic Quality' and 'Geographic Location'. The most robust indicators are institutional images relating to perceived academic quality and geographic location.

Discussion

In regard to the series of propositions offered earlier, this study finds that two images, 'Academic Quality' and 'Geographic Location' directly impact upon the student enrollment decision process. As hypothesize, those students with positive institutional images are more likely to enroll than those students with less positive images. Table 2 shows that the 'Academic Quality Image' does vary based on one's academic ability; low academic ability students view this institution more positively than high academic ability students. Similarly, one's family income level significantly influence their images surrounding an institution's geographic location and its social/cultural environment; students from families with low family income levels view this institution's geographic location more positively than their more affluent counterparts but less positively on the image regarding the social/cultural environment. Table 4 shows that a student's academic ability has a direct impact on his/her enrollment decision process. Table 4 affirms the above finding which shows that an institution's social/cultural image is influenced by a student's family income level.

Given the above findings, it is appropriate to show how perceptions of an institution impacts upon the student enrollment decision process. Table 5 illustrates how family income and academic ability impacts upon our yield controlling for the effects of these three institutional images. This table clearly shows that academic ability and family income level do impact upon one's enrollment decision. This institution

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Table 5: The Effect of Family Income and Academic Ability on Enrollment Status Controlling For Three Institutional Images

Yield Estimates

.61 = o Low Family Income Level
o Low Academic Ability

.59 = o High Family Income Level
o Low Academic Ability

.44 = o Low Family Income Level
o High Academic Ability

.42 = o High Family Income Level
o High Academic Ability

increases its enrollment yield by aiming its messages at low academic ability students. This finding is not surprising when noting that these students perceive this institution's academic quality more positively than those high academic ability students. The relatively low enrollment yield among students with low family income levels but possessing high academic skills is an area that can be tapped for intensive recruitment. This study shows that one's family income level influences one's perception of an institution's geographic location. Students with low family income levels have a more positive image of this institution's location than do their more affluent counterparts. When recruiting these students, emphasis must be placed on the academic quality of the institution. By raising the academic quality image, in the eyes of these students, enrollment yields will increase. Similarly, when recruiting students with high family income levels the emphasis should be on the institution's geographic location and social/cultural environment than on its academic quality. These findings support the argument that an increase in financial aid to the low family income student with high academic ability, may increase the enrollment yield among this group. This institution

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stands little chance of recruiting students who possess high academic abilities and are from families with high income levels.

Conclusion

This study shows that this institution, in order to maximize enrollment yields, should develop two different marketing messages; one stressing academic quality while another stressing geographic location. The first message should be aimed primarily at students from families with low family income levels. The second message should be aimed primarily at more affluent students who are looking for an institution which can help them reassert themselves academically. This study reveals that institutional images are received differently by particular sub-populations. Given this, it is imperative that an institution clearly understand its niche in the educational marketplace and craft a message which is consistent with its stated mission statement. Failure to do this may lead to a mixed message being sent to the educational community and a subsequent decline in enrollment yields.

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POST BACCALAUREATE PLANS: FACTORS THAT INFLUENCE GRADUATE SCHOOL SELECTION[1]

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In his 1986 study, *Students in Graduate and Professional Education: What We Know and Need to Know*, Arthur Hauptman concluded that current aggregate data collection efforts do not provide sufficient insight into "students' decisions to continue their education beyond the baccalaureate level" (p. 90). The primary objective of this paper is to describe what one New England University has been doing for the past two years to gain a better understanding of the factors that influence graduate school choice. This paper will examine two aspects of graduate school choice: (1) the major factors in the applicants selection of a graduate school, and (2) the influences of specific sources of information on the graduate school selection process.

The data for this study have been gathered over the past two years. The major source of information was a survey instrument administered to those applicants who were accepted to the Graduate School of International Affairs.[2] The questionnaire[3] was designed to gather the following information: (1) the graduate and professional schools to which the accepted applicant pool applied, (2) the institutions' admissions decisions, (3) financial aid information, including whether the individual applied for aid, was granted aid, and the amount of the award; (4) the institution of matriculation,

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[1] I'd like to express by appreciation to Peter Secakusuma the project research assistant.

[2] Approximately one month after applicants were notified of the admissions decision, questionnaires were mailed to all applicants who were offered admissions. For the Class admitted for Fall 1987, the response rates for matriculants and non-matriculants were 63 percent and 45 percent respectively. For the Class admitted for Fall 1988, the response rates were 58 percent and 49 percent respectively.

[3] Copies of the questionnaire are available from the author.

(5) how influential specific sources of information and attributes of the institution were in the final.matriculation decision and (6) general demographic characteristics.

Influential Factors

Accepted applicants were asked to list the three factors that most influenced their decision to attend a specific graduate/professional school. Applicants' responses were fairly consistent over time (Tables 1 and 2). Factors that were important in the applicants' matriculation decision included the academic reputation of the institution, the appropriateness of the academic program, the curriculum, and the amount of scholarship awarded. Somewhat higher proportions of the matriculant population identified academic program and appropriate program as important factors. This may partially be explained by the fact that the matriculant population tended to apply only to graduate schools of international affairs whereas the non-matriculant population applied to a variety of graduate programs including economic, political science, and law. The amount of scholarship awarded was identified as a important factor more frequently by non-matriculants. In both years examined, approximately thirty percent of the non-matriculants cited the amount of scholarship as a factor as compared to ten percent of the matriculants.

TABLE 1[4]
1987
MOST FREQUENTLY LISTED FACTORS INFLUENCING ENROLLMENT DECISIONS

Matriculants		Non-Matriculants	
Rank		Rank	
1. Academic reputation	50%	1. Academic reputation	42%
1. Appropriate program	50%	2. Appropriate program	38%
3. General reputation	46%	3. Better scholarship	31%
4. Curriculum	30%	3. Location	31%
5. Location	20%	5. Other	23%
6. Faculty reputation	15%	6. General reputation	21%
6. Cross-registration	15%	7. Better aid	14%
8. Placement record	13%	8. Curriculum	11%
9. Other	11%	8. Joint degree option	11%
10 Better scholarship	9%	10. Campus life	10%
		10. Cross-registration	10%
		10. Placement record	10%

TABLE 2[5]
1988
MOST FREQUENTLY LISTED FACTORS INFLUENCING ENROLLMENT DECISIONS

Matriculants		Non-Matriculants	
Rank		Rank	
1. Academic reputation	67%	1. Academic reputation	40%
2. Appropriate program	49%	2. Appropriate program	38%
3. Curriculum	46%	3. General reputation	34%
4. Other	38%	4. Better scholarship	30%
5. General reputation	29%	5. Location	25%
6. Faculty reputation	17%	6. Curriculum	21%
7. Placement record	13%	7. Overall cost	16%
8. Contact with Faculty	12%	8. Placement record	13%
9. Cross-registration	11%	9. Faculty reputation	11%
10 Better scholarship	10%	10. Annual tuition	10%

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[4] Percentages given are the proportion of all respondents citing that factor.

[5] Percentages given are the proportion of all respondents citing that factor.

Contacts made with school personnel or admissions activities were not listed as the most important factors in the graduate school selection process. However, these individuals and activities were identified as important sources of information.

Sources of Information

Accepted applicants were queried to ascertain the sources of information of which they availed themselves when considering the GSIA. These sources are highlighted Table 3. Applicants obtained information about the graduate school through the course catalog as well as through a variety of individuals familiar with the school.

TABLE 3[6]

SOURCES OF INFORMATION

	Matriculant 1987	Non-Matriculant 1987	Matriculant 1988	Non-Matriculant 1988
1. GSIA catalog	94%	96%	97%	81%
2. College friends	53%	64%	51%	47%
3. GSIA alumni/ae	54%	52%	60%	30%
4. Work colleagues	49%	44%	42%	30%
5. Undergraduate faculty	45%	39%	43%	32%
6. Other[7]	29%	29%	91%	44%
7. Peterson guide	24%	29%	15%	89%
8. Career placement office	22%	32%	23%	19%
9. Newspaper articles citing GSIA	20%	17%	25%	18%
10. GSIA on-campus recruiter	8%	24%	7%	21%
11. GSIA current students	NA	NA	60%	3%
12. GSIA faculty	NA	NA	59%	21%
13. Government organization	NA	NA	36%	25%
14. Interview at GSIA	NA	NA	31%	19%
				14%

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[6] Percentages given are based on the number of respondents (matriculants and non-matriculants) who gave some answer to the item, and represent those who answered affirmatively that the given category was an information source.

[7] For the Class of 1987, examination of the "other" category, suggested GSIA faculty, past or present GSIA students, interviews at the GSIA, and contact with professional or governmental organizations were additional sources of information. As a result these items were added to the 1988 survey instrument.

For the class entering in 1987, there appear to be no obvious distinctions between matriculants and non-matriculants in either the ranking or the percentages of these sources. The most frequently cited source of information about the GSIA in either group was its catalog. It appears from an examination of top ranked items that applicants also obtained information about the GSIA through a variety of means involving a network of people familiar with the school at various levels. Somewhat more non-matriculants listed college friends, their career placement office, or a GSIA recruiter as information sources, though these differences are not large.

For the class entering in 1988, there appear to be greater differences in the magnitude of the responses for matriculants and non-matriculants. Irrespective of these differences, their rank ordering are quite similar. The most frequently cited source of information for the matriculants was the GSIA catalog. In contrast, non-matriculants cited most frequently the category "other". Their responses included a potpourri of information sources including faculty at other graduate and professional schools, correspondence with the GSIA, various acquaintances, and "hearsay".[8] The second most frequently cited source of information for non-matriculants was the GSIA catalog. It appears that, at least at the level of observation afforded by this survey, matriculants and non-matriculants are relying on a variety of individuals for their information.

Best Sources of Information

Accepted applicants were asked to identify their best sources of information about the GSIA (Table 4). The relative importance of each of these information sources within the matriculant and non-matriculant groups is quite similar. The pattern of responses is fairly consistent from one year to the next. During both years the catalog was consistently identified by matriculants and non-matriculants as the best source of information.

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[8] It is disconcerting that such a large proportion of non-matriculants are relying on information sources over which the institution has virtually no control. This is a potential area of great concern, especially given the proportion of non matriculants who cited "other" as their best source of information.

TABLE 4
1987
BEST SOURCES OF INFORMATION[9]

Source	Matriculant 1987	Non-Matriculant 1987	Matriculant 1988	Non-Matriculant 1988
1. GSIA catalog	42%	56%	40%	55%
2. Other	18%	33%	18%	12%
3. Undergraduate faculty	15%	7%	9%	9%
4. GSIA alumni/ae	13%	11%	11%	6%
5. GSIA students	NA	NA	10%	10%
6. Interview at GSIA	NA	NA	8%	7%
7. Work colleagues	6%	2%	9%	3%
8. GSIA faculty	NA	NA	5%	2%
9. College friends	5%	5%	1%	0%
10. Career placement office	2%	0%	2%	0%

There appears to be a difference in the frequency in which "GSIA catalog" was cited as the best source. Non-matriculants, in both classes, cited with greater frequency the GSIA's catalog as their best source of information. From this and the fact that a large percentage of non-matriculants indicated that they relied on third-party sources for information, one might speculate a that these applicants did not have as much actual contact with the GSIA as did those who enrolled. Perhaps the non-matriculants, who applied on average to a larger number of schools, were less likely to pursue more in-depth information from any one school and relied more on peripheral sources such as catalogs.

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[9] Percentages given are based on the number of respondents who provided an answer to this item and exclude individuals who did not.

ACTIVITIES

Accepted applicants were asked to evaluate a list of activities in which they might have participated directly. The information garnered from the survey instrument was very consistent over the two year period (Tables 5 and 6). It appears that little difference exists between matriculants and non-matriculants with respect to activities relevant to their final matriculation decisions. Those activities that involved interaction with individuals closely associated with the school consistently received high marks. Based on average ratings; interaction with faculty, meeting with current students, and class visits were important activities. It appears that activities that promote increased familiarity with the institution are critical. Thus, it may prove advantageous to increase the frequency of such occurrences.

TABLE 5[10]
1987
Activities Relevant to GSIA or Alternate School Acceptance, Matriculant and Non-matriculant

Activity	Average rating	
	Matriculant	Non-matriculant
Faculty meetings	1.4 (1)	1.6 (1)
Student meetings	1.8 (2)	1.7 (2)
Reception for students	1.8 (2)	2.4 (7)
Interview	1.9 (4)	1.9 (3)
Class visit	1.9 (4)	1.9 (3)
Mail from admissions	2.1 (6)	2.3 (6)
GSIA representative	2.5 (7)	2.2 (5)
Phone contact	2.7 (8)	2.6 (8)

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[10] In 1987, respondents were asked to indicate the importance of each activity on their decision to matriculate at their institution of choice. The values for the matriculant group represent activities important for acceptance of GSIA's enrollment offer, while those for the non-matriculants represent activities important for acceptance of enrollment at the respondent's chosen institution. Respondents could rate an activity as Very Important (value of 1), Important (2), Somewhat Important (3), and Not Important (4).

TABLE 6[11]
1988
Activities Relevant to GSIA or Alternate School Acceptance, Matriculant and Non-matriculant

Activity	Average rating	
	Matriculant	Non-matriculant
Faculty meetings	3.27 (1)	3.17 (2)
Class visit	3.25 (2)	3.18 (1)
Interview	3.24 (3)	2.90 (4)
Reception for students	3.16 (4)	2.53 (7)
Student meetings	3.04 (5)	2.82 (6)
GSIA representative	2.36 (6)	2.89 (5)
Phone contact	2.24 (7)	2.36 (8)
Mail from admissions	2.16 (8)	2.94 (3)

Preferences

In 1988, the survey instrument was modified in order to capture more accurately accepted applicants' preferences regarding various activities. Specifically, respondents were asked to evaluate for each of the activities in which they participated which institution was preferable (Table 7). Matriculants were asked to compare the GSIA or the institution they would have attended if they had not chosen the GSIA. Non-matriculants were asked to compare the GSIA and their institution of matriculation.

The responses to this question were somewhat surprising and perhaps even counterintuitive. In five out of the eight items presented, the majority of matriculants and non-matriculants indicated they did not prefer one institution over the other. I found this lack of discrimination on the part of applicants to be quite surprising.

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[11] In 1988, respondents were asked the following question: For each of the activities in which you participated, indicate the importance of each on your decision to attend graduate/professional school. Respondents could rate an activity as Very Important (4), Important (3), Somewhat Important (2), and Not Important (1).

Table 7
Preferences

	Matriculants			Non-Matriculants		
	GSIA	No. Pref.	Other	GSIA	No Pref.	Other
1. Meeting with school rep.	33%	60%	7%	9%	73%	18%
2. Mail from admissions	63%	31%	6%	29%	43%	28%
3. Telephone contact	40%	50%	10%	11%	33%	56%
4. Interview on campus	50%	50%	0%	15%	52%	33%
5. Meeting with students	50%	47%	3%	9%	43%	48%
6. Visit to Classes	25%	68%	7%	0%	58%	42%
7. Meeting with faculty	48%	45%	7%	7%	55%	38%
8. Reception for students	47%	50%	3%	0%	73%	27%

For example, in the question regarding important activities we learned that meeting faculty was very important on their decision to attend graduate school. Given this one might assume that faculty contact at the institution of matriculation would receive high marks. It is true that the institution of matriculation received higher marks than the other institution. For example, forty-eight percent of the matriculants indicated that the GSIA was preferred on this item and thirty-eight percent of the non-matriculants chose their institution of matriculation. However, the surprising twist is the fact that forty-five percent of matriculants and fifty percent of non-matriculants indicated that they did not prefer one institution over the over.

Summary

Examination of the accepted applicant population for the past two years has provided considerable information regarding the characteristics to the pool, the institutions to which the GSIA applicants applied, institutions at which these applicants were accepted, differences in financial aid awards between the GSIA and it s competitors, sources of information that were utilized and admissions related activities in which individuals participated.

Some of the most valuable information that was this type of research provided was to give the GSIA a better understanding of the competition at the various stages of the admissions process. Also, the comparative financial aid data that was collected has proven to be very useful.

This type of research is beginning to give the GSIA a better understanding of the factors that go in to the graduate/professional school choice process. It appears that like their undergraduate counterparts that issues of quality are of primary concern. Also, those activities that provide prospective students with a personal touch – contact with faculty and current students, tours of facilities, attending classes – appear to be important influences in the decision making process.

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WHEN IS IT GOING TO STOP?: A SPECULATION ON TUITION RATES AT ONE PRIVATE UNIVERSITY

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ABSTRACT

Reviewing thirty years of national and institutional data, the authors look for reasons for the sharp tuition rise from 1980 on, and speculate that self-imposed enrollment restrictions may have been a major contributor.

DATA AND DISCUSSION

This paper is based on data for Tufts University, in Medford and Somerville, Massachusetts. Tufts is private selective institution in the "Doctoral-Granting I" Carnegie Commission classification. The University enrolls about 7,400 full-time students, 4700 of whom are undergraduates; the balance are in a variety of graduate and professional programs. Tuition levels and total resident charges (tuition, mandatory fees, room, and board) at Tufts are among the highest in the United States.

The speculation outlined in this paper will not be broadly applicable to institutions of higher education. However, since tuition charges at Tufts have been rising at about the same rate as those at many competing institutions, we suggest that researchers at other colleges and universities examine their own recent trends, to see whether the argument is relevant to their history or to their future planning.

From 1960 through 1980, tuition rates and total resident charges at Tufts University rose only slightly faster than national economic indicators such as the Gross National Product Deflator (GNP Deflator) and the Consumer Price Index (CPI). The charges that students and their parents faced grew in real terms, but slowly. (Table 1 and Graph 1)

While it is not relevant to this inquiry, it is worth noting that national income measures such as Median Family Income (MFI) or Disposable Personal Income Per Capita (DPI) also grew in real terms. In general, their increase paralleled that of the Tufts tuition charges. In other words, the charges at Tufts, though rising in real terms, about kept pace with measures of income: college was terribly expensive in 1980 (46% of MFI), but it took no larger a share of the family budget than it had in 1961 (44%).

Starting about 1980, two changes took place that made "the cost of college" a national issue. The first was that the prices for an undergraduate education at selective institutions started to climb much faster than national economic indicators. In real terms the charges rose much more rapidly than they had before 1980. (Table 1, Graph 1) This is the trend we focus on in this paper. The second change, however, was almost as important though it was less visible to the public: the rate of increase in national measures of income declined, so that families experienced no real growth in their ability to pay for college. Income measures closely paralleled inflation measures during the 1980s. The combination of these changes was explosive: the price of higher education rose much faster than it had in prior decades, and average family incomes ceased to grow. By 1987-88, Tufts' total resident costs amounted to over 60% of MFI.

Why have the charges for undergraduate education gone up so rapidly in recent years? Many of the explanatory factors affected higher education throughout the country; Tufts was no exception:

1. *Plant upkeep and renewal.* For several decades, Tufts, like most institutions, had been underspending on maintenance of its physical plant. Starting at about the turn of the decade, we began to expand these plant upkeep and renewal expenditures significantly.

2. *Faculty salaries* have been increased somewhat faster than inflation.

3. *Equipment expenditures* grew sharply, especially as the University tried to keep pace with demands for computer resources and demands from science and engineering faculty for state-of-the-art laboratory and teaching equipment.

4. *Library materials costs* escalated very sharply.

5. *Federal student aid cutbacks.* As Washington reduced funds for student financial aid, Tufts, like many other institutions, tried its best to replace those funds. Since other expenditures could not be reduced, this replacement put added strain on revenues.

6. *Increasing regulation* (whose social desirability we do not contest) raised the cost of construction and renovation and required additional expenditures on legal, personnel, and accounting matters.

These are the factors that affected most comparable institutions; they are the arguments traditionally (and correctly) advanced when college presidents and others argue the case. There were other causes as well, which may have affected Tufts differently from other institutions:

7. *Inadequate growth in other revenues.* There are only two other significant discretionary revenue sources besides tuition. (Sponsored research revenues are only usable for the purpose for which the grants or contracts are given.) Private

gifts for current use did in fact increase somewhat faster than inflation, but constitute so small a share of total revenue (3%) that they could not contribute substantially to offsetting rising costs. Endowment income available for expenditure, at least in the first five years of the decade, grew more slowly than inflation. At Tufts, this is also a minor source of funds (3%); most of the increased costs have to be borne by tuition revenues.

8. *Staff and faculty growth.* At Tufts, the increases about kept pace with other dimensions of University life, and did not materially affect the student/faculty ratio.

9. *Financial stabilization.* Many institutions, and Tufts was no exception, started the decade of the 1980s with inadequate financial strength. As noted in a previous NEAIR paper (Dunn, 1986), we consciously built up operating funds and reserves during the decade. This improved financial leverage contributed to the operating budget by making it possible to avoid short-term borrowing, by earning interest, and by lowering interest rates on long-term debt.

We suggest that there is a tenth factor, at least at Tufts, and that this factor has been of major importance: **we stopped growing**. From 1961-62 through 1979-80, a period of 18 years, Tufts' undergraduate population rose 1,897 students, over 100 per year. Then, at the turn of the decade, persuaded that a further enrollment increase would heighten our vulnerability to potential demographic declines, and feeling that the campus was already crowded, we put a tourniquet on our enrollment levels. With the exception of an unexpectedly high yield rate in 1987, we have stayed level since then. (Table 2 and Graph 2)

It may not be immediately clear why halting an enrollment growth should cause tuitions to rise.

In describing his "revenue theory of cost", Howard Bowen (1981) observed that colleges and universities use all the funds they can obtain. There is no fixed level at which there is "enough" revenue. There are always pressing and persuasive needs for additional faculty, better laboratory equipment, expanded library collections, increased student aid, renovated or expanded facilities. We would state the point more aggressively: institutions of higher education have a steady and insatiable appetite for resources. There are always more worthy projects than funds to support them, and there are articulate advocates for each. It may be that this drive for growth is typical of all organizations, in the sense that C. Northcote Parkinson observed (1957). However, it seems more pressingly true of higher education.

Tuition and fee revenues remain the principal flexible sources of income. During the 1960s and 1970s, we had met our tuition revenue growth needs through a combination of enrollment increases and tuition rises. Halting enrollment growth shut off one source. The appetite for incremental money then could be satisfied only through a much more rapid rise in tuition rates. (Table 2 and Graph 3)

The importance of this tenth factor is easy to quantify. At the tuition rates prevalent during the 1980s, each year in which we declined to increase enrollment by the historical 100 students, we sacrificed from $600,000 to $1,200,000 of revenue. That revenue continued and multiplied so long as the students stayed in the system. This amount far outweighed the annual costs of any of the incremental expense factors identified above.

It can properly be argued that adding students increases both immediate short-term costs and long-term costs. The marginal cost of adding one student is vanishingly small. Adding ten or twenty may mean an additional teaching section here or there. The long-term costs of adding several hundreds of students, however slowly, can be substantial: added classroom buildings and laboratories, expanded libraries, incremental faculty. We are not arguing in favor of expediency, but we do recognize the reality that in year-to-year budget planning it is often less painful to increase enrollment slightly ("just for this year") than to refuse planned program, faculty, or facility improvements.

In the sections above, we laid out the positive arguments that underlie the case for tuition increases – the improvements in program, faculty salaries, facility upkeep, and the like. Increases in price would not have been possible, however, if there had been countervailing pressures in the market.

Tufts could not have raised its rates as fast as it did during the 1980s if other institutions had not been increasing at about the same rate. We did not significantly change our market position in terms of relative price, though we did increase our selectivity. What Tufts and other institutions found is that there was a segment of the population that could continue to meet the increasing prices, and that was persuaded that those higher fees gave the institutions the resources they needed to provide superior educational experiences.

Further, we believe that the generally optimistic economic outlook of the 1980s also contributed. The economy was improving, inflation came under control, the stock market soared, the United States regained its sense of importance on the world's stage, and there was even some progress towards arms control. Families are much more willing to take on the costs of a Tufts education if, when the prospective student is a high school junior or senior, they feel fairly confident about the family financial future over the next five or six years.

The implications of this speculation for the future are rather intriguing. The rapid-tuition-rise strategy is unlikely to be viable for much more than another couple of years. At that point, if the institution's appetite for money is to be satisfied, we need to start growing again. If Tufts is at all typical, other schools will start to do the same. That strategy will run into the reality that it isn't until the middle 1990s that the potential enrollment pool goes up materially, and that those new high school graduates will be very different from those we are used to serving.

Back to the question in the title: when is it going to stop? We have two comments and a prophecy. First, tuition rate escalation is **not** going to stop. The economic and the political realities of the industry are such that its costs will continue to increase at or above the overall national rate of inflation. That has been true for decades, and will continue. Second, the rate at which tuition rates escalate relative to inflation will be determined by the absence or presence of outside market constraints. The rates will moderate only if outside pressures such as declining student populations or imposed tuition ceilings force institutions to cut back expenditures. The prophecy is that Tufts (and perhaps other institutions in similar situations) will begin again to expand enrollment if their ability to raise tuitions is significantly constrained.

We challenge others in NEAIR to reexamine and rethink what the real motivations behind their institutional behavior have been, so that they can better understand the past as they plan for the future.

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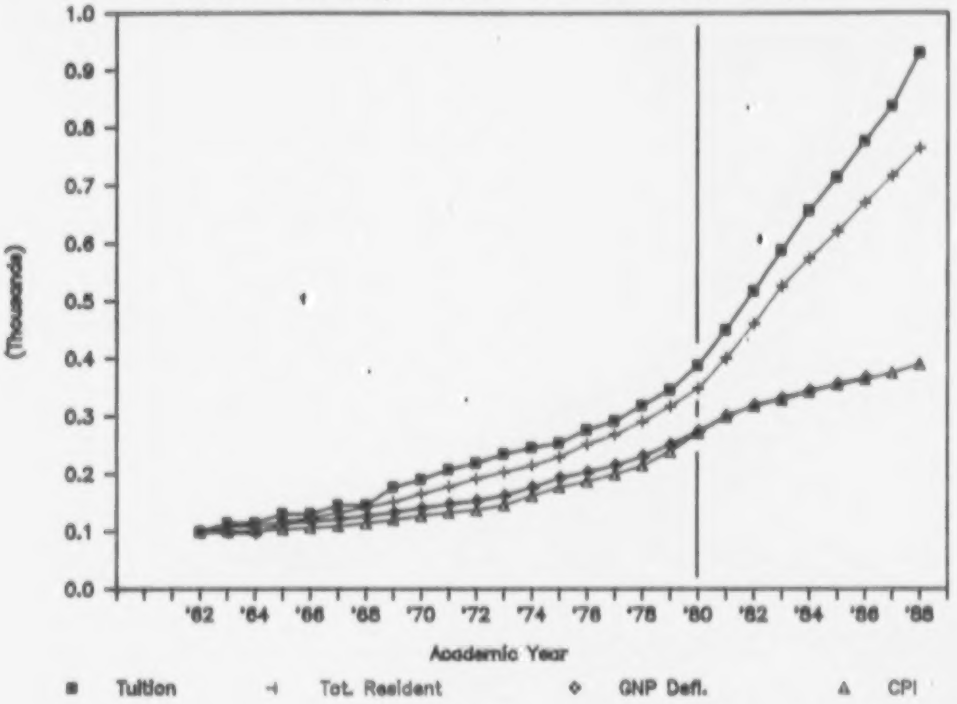
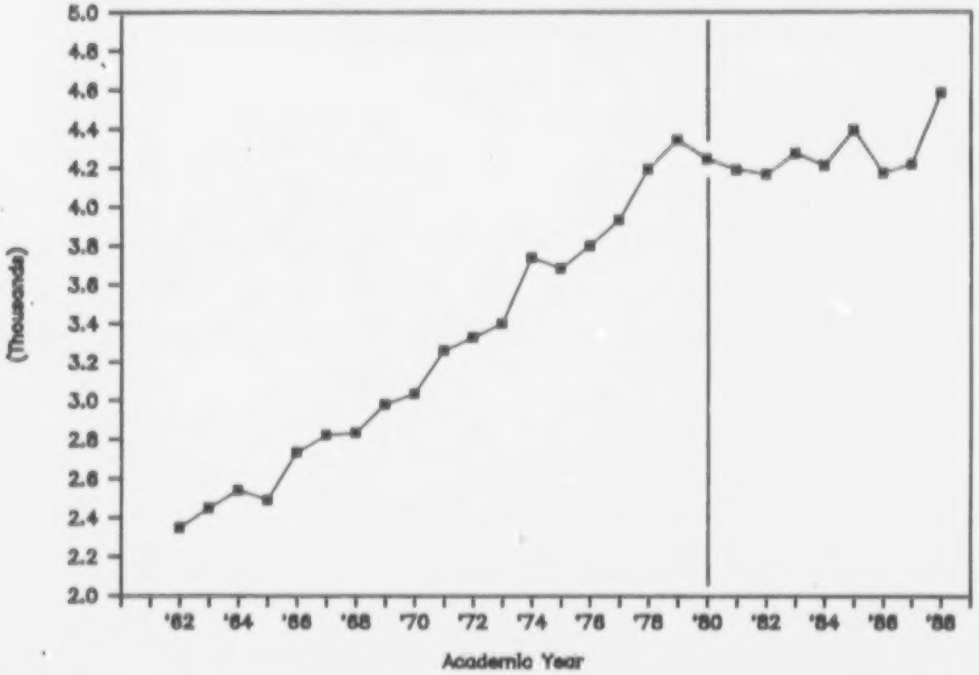
Graph 1: **Tufts Charges and Economic Indicators:**
Index Values, 1961–62 to 1987–88



Graph 2: **Tufts Liberal Arts & Engr. Enrollment**
1961–62 to 1987–88



Graph 3: **Tuition Revenue Increase Contributions:**
Enrollment Growth vs. Tuition Rise

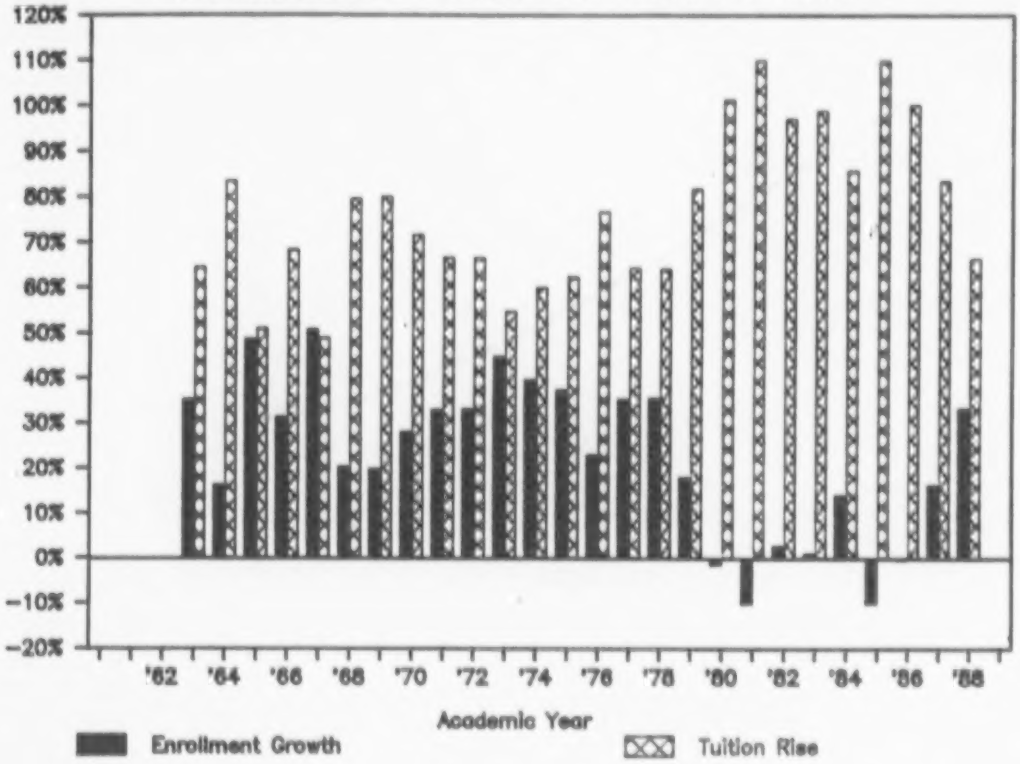


Table 1: TUFTS UNIVERSITY UNDERGRADUATE CHARGES vs. NATIONAL ECONOMIC INDICATORS

		BASE DATA				INDEX NUMBERS			
		Tufts University		National Stats.		Tufts University		National Stats.	
Calendar Year	Academic Year	Undergrad. Tuition	Total Resident Charges	GNP Deflator	Consumer Price Index	Undergrad. Tuition	Total Resident Charges	GNP Deflator	Consumer Price Index
		($)	($)			($)	($)		
1962	1961-62	1,300	2,225	31.3	90.6	100.0	100.0	100.0	100.0
1963	1962-63	1,500	2,450	30.9	91.7	115.4	110.1	98.6	101.2
1964	1963-64	1,500	2,450	30.4	92.9	115.4	110.1	97.0	102.5
1965	1964-65	1,700	2,650	35.9	94.5	130.8	119.1	114.7	104.3
1966	1965-66	1,700	2,775	37.0	97.2	130.8	124.7	118.2	107.3
1967	1966-67	1,900	2,975	38.1	100.0	146.2	133.7	121.7	110.4
1968	1967-68	1,900	3,200	39.8	104.2	146.2	143.8	127.1	115.0
1969	1968-69	2,300	3,400	41.9	109.8	176.9	152.8	133.8	121.2
1970	1969-70	2,475	3,718	44.1	116.3	190.4	167.1	140.8	128.4
1971	1970-71	2,700	3,993	46.3	121.3	207.7	179.5	147.9	133.9
1972	1971-72	2,850	4,305	48.2	125.3	219.2	193.5	153.9	138.3
1973	1972-73	3,050	4,550	51.0	133.1	234.6	204.5	162.9	146.9
1974	1973-74	3,200	4,815	55.5	147.7	246.2	216.4	177.3	163.0
1975	1974-75	3,300	5,140	60.7	161.2	253.8	231.0	193.9	177.9
1976	1975-76	3,600	5,635	63.8	170.5	276.9	253.3	203.8	188.2
1977	1976-77	3,800	5,995	67.6	181.5	292.3	269.4	215.9	200.3
1978	1977-78	4,150	6,498	72.5	195.4	319.2	292.0	231.5	215.7
1979	1978-79	4,500	7,084	78.8	217.4	346.2	318.4	251.7	240.0
1980	1979-80	5,050	7,770	86.0	246.8	388.5	349.2	274.7	272.4
1981	1980-81	5,850	8,934	94.3	272.4	450.0	401.5	301.2	300.7
1982	1981-82	6,725	10,268	100.0	289.1	517.3	461.5	319.4	319.1
1983	1982-83	7,650	11,716	103.8	298.4	588.5	526.6	331.5	329.4
1984	1983-84	8,534	12,791	107.9	311.1	656.5	574.9	344.6	343.4
1985	1984-85	9,280	13,836	111.5	322.2	713.8	621.8	356.1	355.6
1986	1985-86	10,100	14,937	115.0	330.2	776.9	671.3	367.3	364.5
1987	1986-87	10,900	15,958		340.4	838.5	717.2		375.7
1988	1987-88	12,092	17,032		354.4	930.2	765.5		391.1

Notes: Tufts data are for academic years, National data for calendar years
Source: Tufts data from Tufts University; National data from Dept. of Labor.

Table 2: CONTRIBUTIONS TO TUFTS UNDERGRADUATE TUITION REVENUE INCREASES, 1961-62 THROUGH 1987-88

				YEAR-TO-YEAR CHANGES			THREE-YEAR MOVING AVE.			Pct.	Pct.
Academic Year	FT Under-grads.	Tuition Rate	Result. Tuition Revenue	Tuition Revenue Incr.	From Enrol Incr.	From Tuition Incr.	Tuition Revenue Incr.	From Enrol Incr.	From Tuition Incr.	From Enrol Incr.	From Tuition Incr.
		($)	($'000)	($'000)	($'000)	($'000)	($'000)	($'000)	($'000)		
1961-62	2352	1,300	3,058								
1962-63	2453	1,500	3,680	622	131	491	379	134	245	35%	65%
1963-64	2544	1,500	3,816	137	137	0	394	64	330	16%	84%
1964-65	2494	1,700	4,240	424	-75	499	324	158	166	49%	51%
1965-66	2737	1,700	4,653	413	413	0	517	162	355	31%	69%
1966-67	2824	1,900	5,366	713	148	565	383	195	188	51%	49%
1967-68	2836	1,900	5,388	23	23	0	736	150	586	20%	80%
1968-69	2983	2,300	6,861	1473	279	1193	717	142	575	20%	80%
1969-70	3037	2,475	7,517	656	124	531	1141	321	820	28%	72%
1970-71	3263	2,700	8,810	1294	559	734	878	290	588	33%	67%
1971-72	3332	2,850	9,496	686	186	500	955	317	638	33%	67%
1972-73	3404	3,050	10,382	886	205	681	1056	475	581	45%	55%
1973-74	3743	3,200	11,978	1595	1034	561	890	353	537	40%	60%
1974-75	3687	3,300	12,167	190	-179	369	1103	413	690	37%	63%
1975-76	3803	3,600	13,691	1524	383	1141	994	229	766	23%	77%
1976-77	3937	3,800	14,961	1270	482	787	1752	619	1133	35%	65%
1977-78	4198	4,150	17,422	2461	992	1469	1955	696	1259	36%	64%
1978-79	4346	4,500	19,557	2135	614	1521	2166	390	1776	18%	82%
1979-80	4249	5,050	21,457	1900	-437	2337	2369	-35	2404	-1%	101%
1980-81	4193	5,850	24,529	3072	-283	3354	2827	-287	3113	-10%	110%
1981-82	4169	6,725	28,037	3507	-140	3648	3754	101	3653	3%	97%
1982-83	4277	7,650	32,719	4683	726	3956	3814	37	3777	1%	99%
1983-84	4215	8,534	35,971	3252	-474	3726	4253	599	3654	14%	86%
1984-85	4396	9,280	40,795	4824	1545	3279	3160	-318	3477	-10%	110%
1985-86	4178	10,100	42,198	1403	-2023	3426	3350	-11	3361	-0%	100%
1986-87	4222	10,900	46,020	3822	444	3378	4890	800	4090	16%	84%
1987-88	4587	12092	55,466	9446	3979	5468	6634	2211	4423	33%	67%

Notes:

"Resulting tuition revenue" is full-time students times tuition rate.

"From enrollment increase" in year 2 is enrollment increase in year 2 over year 1, times tuition in year 1.

"From tuition increase" in year 2 is tuition increase in year 2 over year 1, times enrollment in year 2.

Source: Tufts Fact Books

THE INTERACTIVE EFFECT OF CONCERN ABOUT PRICE ON COLLEGE CHOICE

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BACKGROUND

Theory and research on a student's college choice behavior indicate that it is still inconclusive how the pricing of postsecondary education and financial aid policies affect the student's application and enrollment decision (Young and Reyes, 1987).

Econometricians have applied demand theory in economics to higher education research, hypothesizing an inverse relationship between cost of attendance and demand for educational services (Becker, 1965; Schultz, 1982). Leslie and Brinkman (1987) reviewed 25 empirical studies, using a meta-analytic method. They found that higher prices reduced enrollments; in the 18-24 year-old age group, every $100 increase in tuition led to a drop in the enrollment rate of about three-quarters of a percentage point. Their study also pointed out that students historically have been more responsive to tuition prices than to (offsetting) student aid.

However, this cost-benefit approach does not entirely explain why various subpopulations such as different ethnic groups still differ in postsecondary education application and enrollment rates, despite minimizing differences of educational cost through financial aid (Gardner, et al., 1985). Such differences could be attributed to noneconomic social or cultural factors. The classical work conducted by Spies (1973, 1978) indicated that price had little effect upon the decisions of 2,545 high-ability students to apply to high-priced, selective institutions. Rather, educational considerations such as the academic reputation of the institution and the ability of the prospective applicant were the primary determinants of college choice. A series of studies recently conducted by the Consortium On Financing Higher Education (COFHE) has also substantiated the previous finding that tested-ability, parental education, and family income are positively associated with a high incidence of applications to highly selective, elite colleges (Litten, 1987).

In sum, demand theory supports the notion that price of education significantly affects the student's application and enrollment decision. In contrast, socioeconomic approaches emphasize the significant influence of sociological as well as economic factors on a student's college choice. Recently, however, greater attention has been paid to a third approach, that is, the consumer approach of educational marketing (Kotler and Fox, 1985). From the consumer behavior perspective, the enrollment decision-making process is seen as a hierarchy of increasingly more specific decisions. Kotler and Fox (1985) identified five decision stages. In the first stage, the student develops an initial interest in college ("need arousal"). In the second stage, "information gathering" takes place and the student collects information about postsecondary alternatives, depending upon the level of his/her information need. The third stage is "decision evaluation", in which the student evaluates benefits and costs of alternatives and narrows the choice. This stage is followed by "decision execution," when the student makes a final enrollment decision. The last stage of the decision-making process is the "postdecision assessment" which occurs after his/her enrollment decision. The approach addresses intriguing research questions such as how perceptions of the costs and benefits of alternative choices are developed by the information available to the student and how these perceptions are factored into the final enrollment decision (Kotler and Fox, 1985).

The present study adopts the consumer approach and investigates **how perception of cost of education interacts with monetary and nonmonetary variables to explain the enrollment decision.** It is assumed here that monetary and nonmonetary factors weigh differently in a student's enrollment decision, depending upon how the student perceives the cost of attending the educational institution. It is possible to argue that nonmonetary factors such as a student's academic ability or parental expectations may weigh more heavily as the level of concern about price of education decreases. As the level of concern increases, monetary factors such as amount of financial aid or cost of traveling between home and college may become more influential.

At least one study has attempted to examine such an interaction hypothesis. Surveying a large number of high school seniors and parents in six major metropolitan areas, Brodigan and others (1980) found that as the concern about price decreases, the impact of SAT scores on the probability of preferring and actually applying to expensive, highly selective colleges increased. However, the conclusion was based on limited, descriptive statistics.

CONCEPTUALIZATION: price vs. Concern about price

In the previous studies, the distinction between "price" and "concern about price" is not very clear. "Price" of education is a fixed price charged by the institution, while "concern about price" of education involves personal judgment or evaluation on one's financial capability to pay that price. This evaluation process is very personal. Mr. A might interpret, for example, that $10,000 annual tuition is affordable, while Ms. B might judge it to be beyond what she can afford, even though they have the same assets and income. Most probably, they will behave quite differently, according to their own evaluation of "price." It is well-documented in information processing literature that people undertake actions based on perception and evaluation of information available to them (McGuire, 1978; Bettman, 1979). "Concern about price of education" is a key concept in the present study. We define "concern about price of education" as anxiety created by personal evaluation of one's own financial ability to pay a given price charged by an educational institution.

MEASURES AND HYPOTHESES

Except for foreign students, all freshmen (N=4399) accepted to the Endowed Colleges of Cornell University for the fall of 1987 were examined in the present study.

In a previous survey (Brodigan, et al. 1980), the concept of "concern about price" was measured by asking students to evaluate how concerned they were about the price charged by the institution to which they intended to apply. "Low," "medium," and "high" choice categories were presented to the respondents.

In the present study, concern about price was measured in an unconventional, unobtrusive manner. That is, their financial aid application status was used to measure the degree of their concern about price. 1916 students who did not apply for financial aid were labeled as "Non-Applicants (for financial aid)" and were considered to have had a low level of concern about price charged by Cornell. 643 students were named "No-Need." They applied, but were judged to be unqualified to receive financial aid by the institution because their parental contributions met the cost of attendance. These students were highly concerned about price even though they were objectively judged to have financial strength similar to that of Non-Applicants. The remaining 1840 students were financial aid recipients. These 1840 students had a higher level of concern about price than did the Non-Applicants. Although we might argue that the function of financial aid is to reduce the level of price concern, we cannot assess from our data whether the aid recipients actually had a lower level of price concern than did the no-need students.

College enrollment behavior was measured by the dichotomous variable which assigned 1 to the students who were admitted by and actually enrolled in Cornell University and 0 to the students who were accepted, but did not matriculate. The following hypotheses were then formulated.

As Brodigan and others observed, the concern about price may lessen the influence of academic ability on the student's enrollment decision. In other words, the impact of academic ability on the enrollment decision will be greater among the students with little price concern than among the students with high concern. Therefore,

> Hypo I: The impact of academic ability on the student's enrollment decision will be significantly greater in the "Non-Applicant" group than in other groups.

A previous study (Hoenack and Weiler, 1974) converted distance between home and university into a dollar value and found that the cost associated with traveling between home and university can be used as a valid measure of the cost of attending a university. In other words, students who live a considerable distance away must pay more to attend a college than students who live close to the college.

The distance between home and university, then, may have a significant impact on the enrollment decision among the students with great concern about college price, while it may have minimal impact among those with little price concern. Based on this argument,

> Hypo II: The impact of distance between home and university on the student's enrollment decision will be significantly smaller in the "Non-Applicant" group than in other groups.

ANALYSIS DESIGN

The student population was first divided into the following subcategories: "Aid Recipients," "No-Need," and "Non-Applicants" based on their financial aid status. Then, logit regression analysis was applied to each subgroup to test our hypotheses. Our dependent variable is a dummy variable, coding 1 for matriculants and 0 for non-matriculants. Five independent variables used in the regression equation were: 1) SAT math scores; 2) SAT verbal scores; 3) a dichotomous measure of gender (1 for male, and 0 for female); 4) a dichotomous measure of ethnicity (1 for Blacks, Hispanics, as well as American Indians, and 0 for others); and 5) a rank-ordered measure of distance between home region and Cornell University. Of particular interest is how these independent variables differently influence the dependent measure for each of the three different groups.

Logit regression is superior to ordinary regression in the analysis of dichotomous (or discrete) dependent variables. This is because, as a consequence of the discrete nature of a dependent variable(s), the distribution of the random component of the regression equation cannot be independent of the "independent" variables, thus making the full set of ordinary regression (Gauss-Markov) assumptions untenable. In logit regression, for each dependent variable, the logistic function is created by taking the logarithms of the ratios of two probabilities. That is, the denominator of the ratio is the marginal probability corresponding to the last observed level of the variable, and the numerators are the marginal probabilities corresponding to each of the other levels. Then the maximum likelihood method is used to estimate regression coefficients, which maximize the probability of having obtained the observed value of the dependent variable (Aldrich and Nelson, 1984).

RESULTS

Before reporting the logit regression results, it is useful to summarize the descriptive analysis results below.

1) Table 1 indicates that the No-Need group had a 37.0% yield rate, which was significantly smaller than the Non-Applicant group (44.7%) and the Aid Recipient Group (42.8%). There was no statistically significant difference between the Non-Applicant and the Aid Recipient group. The concern about the price of an education might have had a depressing effect on the student's enrollment decision and thus the No-Need Group with strong price concern had the lowest yield rate.

Table 1

Yield Rates in Endowed Sector by Financial Aid Status

	Accepted	Entered	Not Enter	Yield
Non-Applicants	1,916	857	1,059	44.7%
No-Needs	643	238	405	37.0%
Aid Recipients	1,840	788	1,052	42.8%
Total	4,399	1,883	2,516	42.8%

* Foreign students were excluded from the analysis.

2) Table 2 (a), (b) and (c) represent means and standard deviations of the independent variables for the Non-Applicants, No-Need and Aid Recipient groups respectively. In all three groups, we observed that the non-matriculants had significantly higher SAT verbal and math scores than the matriculants. Students with higher academic abilities tend to enroll in other rival Ivy League schools. The results seem to reflect this trend, although from our data we cannot specify which college the non-matriculants decided to enter.

3) The mean distance, measured by a rank order of the distance between home region and Cornell University, was significantly smaller for the matriculants than for the non-matriculants in the No-Need Group as well as in the Financial Aid Group. A significant difference of the mean distance, however, was not observed in the Non-Applicant Group. Distance may have affected the enrollment decision more greatly among those with strong price concern than those with little concern.

4) As far as the dichotomous variables measuring minority status and gender are concerned, mean values of .5 would be obtained if there were an equal number of minority and majority, or male and female students. In the Non-Applicant group, the ratio (.01) of the matriculants from the minority groups was significantly smaller than the ratio (.04) of the non-matriculants from the same ethnic origins. Such a significant difference in ethnicity between non-matriculants and matriculants was not observed in either the No-Need or in

Table 2 (a)

Means and Standard Deviations of Variables
Non-Applicant Group (N=1916)

	Group (N=1916)	Matriculants (N=857)	Non-Matric. (N=1059)	T-test Matric vs. Non-Matric
Distance	2.88 (1.90)	2.82 (1.88)	2.92 (1.92)	n.s.
SATverbal	621.9 (83.7)	605.8 (79.8)	635.1 (84.6)	p <.0001
SATmath	697.3 (72.8)	688.0 (71.7)	704.8 (72.9)	p <.0001
Gender	.61 (.49)	.61 (.49)	.60 (.49)	n.s.
Minority	.02 (.15)	.01 (.09)	.04 (.19)	p <.0001

Table 2 (b)

Means and Standard Deviations of Variables
No-Need Group (N=643)

	Group (N=643)	Matriculants (N=238)	Non-Matric. (N=405)	T-test Matric vs. Non-Matric
Distance	3.1 (2.0)	2.80 (1.79)	3.27 (2.10)	p <.01
SATverbal	637.0 (76.6)	623.0 (72.5)	645.2 (77.9)	p <.001
SATmath	707.1 (69.0)	699.7 (60.4)	711.5 (73.3)	p <.05
Gender	.64 (.48)	.65 (.48)	.63 (.48)	n.s.
Minority	.03 (.18)	.03 (.18)	.03 (.18)	n.s.

Table 2 (c)

Means and Standard Deviations of Variables
Aid Recipient Group (N=1840)

	Group (N=1840)	Matriculants (N=788)	Non-Matric. (N=1052)	T-test Matric vs. Non-Matric
Distance	2.8 (2.0)	2.63 (1.88)	2.92 (2.00)	p <.001
SATverbal	611.3 (86.7)	594.4 (89.5)	623.9 (82.4)	p <.0001
SATmath	682.9 (81.4)	675.6 (86.6)	688.4 (76.9)	p <.001
Gender	.62 (.48)	.66 (.47)	.60 (.49)	p <.005
Minority	.10 (.31)	.09 (.29)	.11 (.32)	n.s.

Notes:

1: Entries are means and ( ) entries are standard deviations.

2: Distance is a rank order of distance between home region (New York-1, New England-2, Mid Atlantic-3, South East-4, Mid West-5, South West-6, Far West-7) and Cornell U.

3: SATverbal is an SAT verbal score.

4: SATmath is an SAT math score.

5: Gender is a dichotomous measure with value 1 assigned to male students and value 0 to female students.

6: Minority is a dichotomous measure with value 1 assigned to under-represented minorities (Blacks, Hispanics and Native Americans) and value 0 to others (Asians and Whites).

Table 3 (a)

Correlations among variables
Non-Applicant Group (N=1916)

	Matric	Distance	SATverb	SATmath	Gender	Minority
Matric	1.00	-.03	-.17 **	-.11 **	.01	-.09 **
Distance		1.00	-.08 **	.01	.05	-.04
SATverb			1.00	.43 **	-.01	-.11 **
SATmath				1.00	.20 **	-.21 **
Gender					1.00	-.03
Minority						1.00

** p <.001

Table 3 (b)

Correlations among variables
No-Need Group (N=643)

	Matric	Distance	SATverb	SATmath	Gender	Minority
Matric	1.00	-.11 *	-.14 **	-.08	.02	.01
Distance		1.00	-.14 **	-.13 **	-.04	-.06
SATverb			1.00	.53 **	.08	-.13 **
SATmath				1.00	.28 **	-.17 **
Gender					1.00	-.01
Minority						1.00

** p <.001
* p <.01

Table 3 (c)

Correlations among variables
Aid Recipient Group (N=1840)

	Matric	Distance	SATverb	SATmath	Gender	Minority
Matric	1.00	-.07 *	-.17 **	-.08 **	.06 *	-.03
Distance		1.00	-.03	-.03	.04	-.05
SATverb			1.00	.51 **	-.01	-.21 **
SATmath				1.00	.25 **	-.35 **
Gender					1.00	-.06 *
Minority						1.00

** p <.001
* p <.01

the Aid Group.

5) The Endowed Colleges of Cornell University, particularly the Engineering School, traditionally hold the larger male student population. The ratio (.66) of male matriculants was significantly greater than the ratio (.60) of male non-matriculants in the Aid Recipient Group.

6) Although Table 2 (a), (b) and (c) have provided useful univariate information, the results must be interpreted with caution, since the independent variables are significantly correlated with each other as presented in Table 3 (a), (b) and (c). We must then apply multivariate analysis to see how much each variable weighs on the student's decision to matriculate to Cornell.

LOGIT REGRESSION ANALYSES

Table 4 (a) represents the results of logit regression analysis from the Non-Applicant group. The Chi-square statistic test on each coefficient estimate revealed that SAT verbal scores, SAT math scores, and minority status significantly affected the student's enrollment decision at the .0001 level. Distance and gender appeared to be minor contributing factors.

The results from the No-Need group presented in Table (b) are somewhat different from those in Table 4 (a). Distance most significantly affected the student's decision to enroll in Cornell (X =11.99). The student's academic ability measured by SAT verbal scores was statistically significant with the Chi-square value of 10.93, while SAT math scores, gender, and minority status made rather insignificant impacts. The results from the Aid Recipients group in Table 4 (c) are interesting. SAT verbal score most significantly contributed to the student's enrollment decision (X =38.76), with distance, minority status, and gender also making significant contributions. SAT math scores, on the other hand, again turned out to be insignificant in explaining the financial aid recipient's enrollment choice.

By comparing Table 4 (a), (b) and (c), it can be stated

Table 4 (a)

Analysis of Logit Regression
Non-Applicant Group (N=1916)

	Parameter Estimate	Standard Error	Chi-Square	Significance Level
Distance	-0.0482	0.0250	3.7	n.s.
SATverb	-0.0044	0.0006	43.26	p<.0001
SATmath	-0.0033	0.0008	14.83	p<.0001
Gender	0.1405	0.1011	1.93	n.s.
Minority	-2.2326	0.4323	26.67	p<.0001
Likelihood Ratio			2038.5	p<.0001

Table 4 (b)

Analysis of Logit Regression
No-Need Group (N=643)

	Parameter Estimate	Standard Error	Chi-Square	Significance Level
Distance	-0.1537	0.0444	11.99	p<.001
SATverb	-0.0042	0.0013	10.13	p<.005
SATmath	-0.0016	0.0016	0.94	n.s.
Gender	0.1780	0.1852	0.92	n.s.
Minority	-0.4075	0.4828	0.71	n.s.
Likelihood Ratio			761.44	p<.0001

Table 4 (c)

Analysis of Logit Regression
Aid Recipient Group (N=1840)

	Parameter Estimate	Standard Error	Chi-Square	Significance Level
Distance	-0.0939	0.0252	13.89	p<.0005
SATverb	-0.0042	0.0006	38.76	p<.0001
SATmath	-0.0015	0.0008	3.53	n.s.
Gender	0.3338	0.1059	9.93	p<.005
Minority	-0.0612	0.1758	12.1	p<.0005
Likelihood Ratio			2065.3	p<.0001

that as the level of concern about price increases, the impact of distance between home and university also increases as hypothesized. In other words, the higher level of price concern may enhance the effect of distance between home and University in choosing a college. Another interesting finding here is the influence of academic performance on the student's enrollment decision. SAT verbal score is an important factor in the student's enrollment decision for all the groups, whereas SAT math score substantially affected the student's enrollment behavior only for the Non-Applicant group. The results thus partially support the hypothesis that a higher level of price concern may reduce the effect of academic performance on the enrollment decision.

SUMMARY AND DISCUSSION

The study focused on which factors would significantly influence the student's enrollment choice of a college and how the level of concern about price of education would interact with those factors. The data of freshmen accepted to the endowed sector of Cornell University indicated that:

1) The "No-Need" group, who applied for financial aid, but failed to receive aid, had a significantly smaller yield rate (37.0%) than the Non-Applicants for aid (44.7%) and the Aid Recipient group (42.8%).

2) In all three groups, the student's academic ability, measured by SAT verbal score, was found to be a significant factor affecting his/her college choice decision. SAT math score, however, significantly accounted for the student's enrollment decision only for the Non-Applicant group, not for the No-Need nor for the Aid Recipient group. The finding partially supported our expectation that the impact of the nonmonetary factor such as student's academic ability on the decision would decrease, as the level of price concern increases.

3) For the No-Need and the Aid Recipient groups, distance between home and University was a significant factor in the

student's enrollment decision, but not for the Non-Applicant group. This supported our hypothesis that the higher level of price concern may enhance the effects of cost-related, monetary factors such as cost of traveling between home and University on the college choice decision.

The implications of the present findings for policy formation are evident. First, continuing efforts to aid students from the lower income strata should be fully implemented so that these students can make their enrollment decisions based on nonmonetary considerations, such as academic ability and interest, rather than monetary factors. More importantly, some form of financial aid, for example a non need-based loan, must be established to help students from the upper-middle income strata. These are students who are strongly concerned about educational cost, but not qualified to receive need-based aid. As the present study has clearly addressed, eliminating cost anxiety would enable students to make the decisions on the basis of academic factors.

The present study measured the level of concern about price in an unobtrusive way, using the student's financial aid status. This may be a threat to validity since the level of price concern was determined indirectly by the researchers, not by the respondents. In the future study, this concept can be measured by a questionnaire so that our interaction hypotheses can be tested in a different manner.

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TRENDS IN STUDENT AID: 1980 to 1988[1]

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Financial aid to students in postsecondary education from federal, state, and institutional sources amounted to $24.5 billion in academic year 1987-88. Federally supported programs generated 75 percent of these funds. Institutions awarded 19 percent of all aid, and states accounted for 6 percent. The largest single source of aid, amounting to $11.3 billion (46 percent), was the Guaranteed Student Loan (GSL) program,[2] which includes the regular GSL loan program, Parent Loans for Undergraduate Students (PLUS), and Supplemental Loans for Students (SLS). (See Table 1.)

In 1987-88 the purchasing power of aid available to students surpassed its 1980-81 level for the first time. The value of student assistance dropped early in the decade, largely because of budget cuts approved by Congress during President Reagan's first year in office, and has recovered slowly since then. In inflation-adjusted (constant) dollars, total available aid in 1987-88 was 6.5 percent larger than at the beginning of the decade. (See Table 2.) On the other hand, federal aid which has been increasing in real terms since its 1982-83 plunge, hasn't yet overtaken its 1980-81 all time high. Four sources of aid contributed most of the real growth during the 1980s, counteracting considerable shrinkage in other federal programs. They were, in order of absolute size increases, the GSL program, institutionally awarded aid, the Pell grant program, and state grant programs.

Some of the recent growth in borrowing has been in the regular GSL program as a result of higher loan limits set by Congress and increased eligibility of graduate students, virtually all of whom are now classified as independent under federal rules of need analysis. From a much smaller base the PLUS program grew more rapidly than the regular program. The most dramatic growth, however, has occurred in the SLS program, which jumped 269 percent just in the last year. Reasons for this surge are not altogether clear. In 1987-88 all borrowers of regular GSLs, but not PLUS or SLS, were required to undergo need analysis. Many students may have been encouraged to take out SLSs, thus boosting its volume, rather than go through the more complicated GSL application process. Congress has now acted to stem this tide by requiring that in the future schools determine eligibility for the regular GSL program, as well as for a Pell grant, before a student may obtain a SLS.

The composition of aid distributed through grants, loans, and work has changed considerably over the years. In the mid-1970s, grants accounted for 80 percent of all aid; this proportion declined to 56 percent by 1980-81 and 47 percent in 1987-88. (See Table 3.) During the same period, the proportion of aid provided through loans grew from less than a fifth to over half of all aid available, achieving its highest point this last year. Work accounted for the remaining 3 to 4 percent throughout the decade.

Figure 1 illustrates the purchasing power of grants and loans and the changing balance between them in the 1980s. It underlines the patterns of dropoff and recovery in grants and the general increase in loan volume. Figure 1 also shows that contributions from the various grant programs have shifted a great deal over time. Institutions and states together in 1987-88 contributed more than half of all grant aid, whereas in 1980-81 federal grants accounted for over two-thirds of the total.

Trends in the number of aid recipients and average awards by program show a mixed picture. (See Table 4.) After a lean 1986-87 due to implementation of the Balanced Budget and Emergency Deficit Control Act of 1985 (referred to as Gramm-Rudman-Hollings), generally both the number of recipients and the average amounts awarded were up in 1987-88. The number of Pell recipients peaked at 2.9 million in 1987-88. After decreasing early in the decade, average Pell Grants grew steadily through 1985-86, even after adjusting for inflation, and declined in purchasing power only slightly in the last two years.

For federal campus-based programs (Supplemental Educational Opportunity Grants, College Work-Study, and Perkins loans), inflation-adjusted dollar support declined 17 percent during the 1980s. The numbers of recipients decreased in the first two programs, and all three programs show declining average awards in constant dollars.

The number of regular GSLs fluctuated around 3 million in the first four years of the decade, reaching and maintaining a peak of somewhat over 3.5 million loans for the past four years. The numbers of PLUS and SLS loans grew throughout the period. Average loans in these programs increased somewhat in current dollars but declined in purchasing power until the last year or two when slight upturns occurred.

From 1980-81 to 1987-88 the number of recipients in the combined state grants and State Student Incentive Grant programs increased by 39 percent. Average awards declined in the early 1980s but increased steadily after 1982-83 in both current and constant dollars.

The cost of attending all types of institutions outpaced inflation in the 1980s. (See Table 5.) Meanwhile, median family income increased slightly more than inflation and per-capita income rose a bit more, but far less than tuition and the cost of room and board. To help fill the widening gap between college costs and family income, many institutions (especially the more costly) and states have increased their financial aid significantly faster than inflation. But with the federal effort in student aid eroding during the 1980s, the purchasing power of aid from all sources has increased little more than inflation. Thus, three adverse trends--rapidly escalating college charges, lagging family incomes, and slow growth in student aid--have made financing postsecondary education, on average, more difficult for families and students during the 1980s.

ENDNOTES

[1] This report reproduces much of the information presented in Trends in Student Aid: 1980 to 1988 (New York: The College Board, 1988). More than thirty-five staff members in public and private agencies contributed the basic data, as well as their insights and expertise. Lawrence E. Gladieux and Janet S. Hansen furnished valuable advice and suggestions. Todd E. Hoffmann provided excellent clerical assistance.

[2] This program was renamed the Stafford Student Loan Program as of July 1, 1988.

Sources

Tables 1, 2, 3, and 4:

Pell
1987-88: Unpublished data and estimates from the Office of Student Financial Assistance and the Office of Policy Development in the Office of Postsecondary Education, U.S. Department of Education.

1980-81 to 1986-87: Office of Student Financial Assistance, U.S. Department of Education, Pell Grants End of Year Reports, 1980-81 to 1986-1987. Supplemented by unpublished data.

SEOG, CWS, and NDSL
1984-85 to 1986-87: Unpublished data and estimates from the Office of Student Financial Assistance, U.S. Department of Education and Distribution of Awards in the Campus Based Programs for 1986-1987.
1980-81 to 1984-85: Office of Student Financial Assistance, U.S. Department of Education, Campus-Based Programs Annual Report.

SSIG
1984-85 through 1987-88: 17th through 19th Annual Survey Reports of the National Association of State Scholarship and Grant Programs, Table 12. Office
of Management and Budget, Executive Office of the President, Appendix: Budget of the United States Government, Fiscal Year 1987 (1986).
Unpublished data from the office of Student Financial Assistance, U.S. Department of Education.
1980-81 to 1983-84: Unpublished data and estimates from the Office of Student Financial Assistance, U.S. Department of Education.

GSL/PLUS/SLS
1987-88: Estimates based on projections made by the Office of Student Financial Assistance, U.S. Department of Education.
1980-81 to 1986-87: Unpublished data from the Office of Student Financial Assistance, U.S. Department of Education.

Social Security
1980-81 to 1984-85: Unpublished data from the Social Security Administration, U.S. Department of Health and Human Services.

Veterans Benefits
1980-81 to 1987-88: Benefits Program Fiscal Year 1987 Volume 1, Office of Budget and Finance, U.S. Veterans Administration and unpublished data from the same agency.

Military
Armed Forces Health Professions Scholarship amounts were obtained from the Office of the Assistant Secretary for Defense (Health Affairs). ROTC program funds were obtained separately from the Air Force, Army, and Navy

program offices. The Education Policy Directorate of the Office of the Secretary of Defense provided Armed Forces tuition assistance amounts.

Other Grants and Loans
The amounts were collected through conversations and correspondence with officials of the agencies that sponsor the programs.

State Grant Programs
1980-81 to 1987-88: 13th, 14th, 15th, 16th, 17th, 18th and 19th Annual Survey Reports of the National Association of State Scholarship and Grant Programs.

Institutionally Awarded Aid
1986-87 and 1987-88: Estimates based on the assumption that awards will grow by eight percent in real (inflation-adjusted) dollars.
1980-81 to 1985-86: Center for Education Statistics, U.S. Department of Education, Digest of Education Statistics 1987, p. 226 and unpublished data from that office.

Table 5:

Cost of Attendance Data: Center for Education Statistics, U.S. Department of Education, Digest of Education Statistics 1987, pp. 222-223. Revised figures

for 1985-86 through 1987-88 were provided by the Center for Education Statistics, Office of Educational Research and Improvement, U.S. Department of Education.

Income Data: Median Family Income--Bureau of Census, U. S. Department of Commerce, Current Population Reports, Series P-60, Nos. 137, 142, 145, 151, 154 and 157. Disposable Personal Income Per Capita--Bureau of Economic Analysis, U. S. Department of Commerce, National Income and Wealth Division, Survey of Current Business, July 1987, pp. 78.

Consumer Price Index:

The Consumer Price Index for current and past years is from Bureau of Labor Statistics, U.S. Department of Labor, unpublished compilation of monthly CPIs since 1949 (base year 1967=100). Forecasts of the CPI are from the Congressional Budget Office.

Figure 1

Purchasing Power and Changing Composition of Grant and Loan Aid in the 1980s
(Constant 1982 Dollars in Millions)

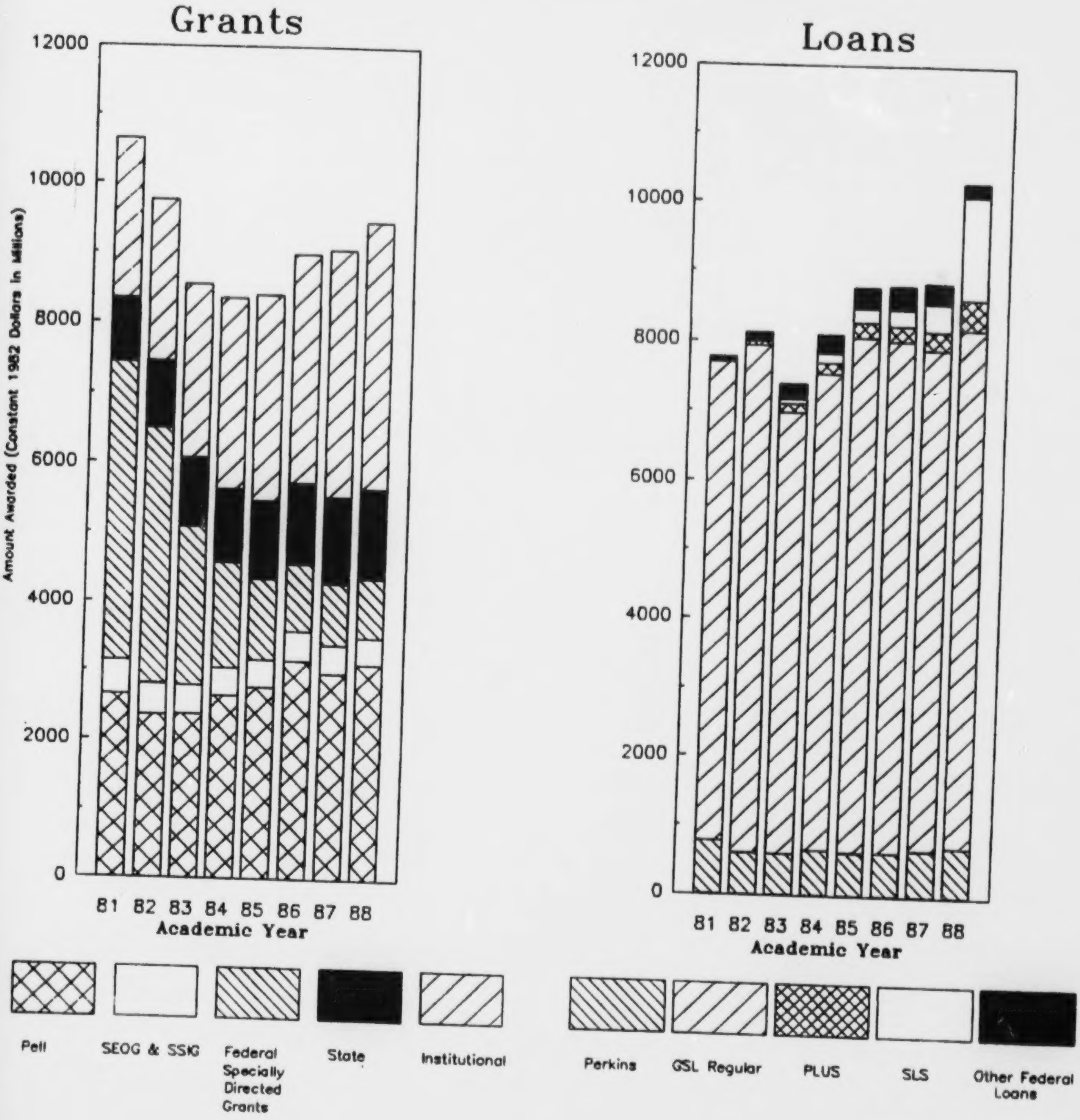

Table 1. Aid Awarded to Postsecondary Students in Current Dollars (in Millions)

Federally Supported Programs	Academic Year								
	1980–81	1981–82	1982–83	1983–84	1984–85	1985–86	Estimated 1986–87	Estimated 1987–88	Percent Change 80–81 to 87–88
Generally Available Aid									
Pell Grant	2,387	2,299	2,418	2,792	3,033	3,567	3,443	3,739	56.6
SEOG	368	362	343	361	374	410	400	396	7.7
SSIG	77	77	74	60	76	76	73	76	−1.3
CWS	660	624	615	683	645	656	641	665	0.7
Perkins Loan (NDSL)	694	580	597	682	677	703	764	853	23.0
Income Contingent Loan								5	
GSL, PLUS, and SLS	6,203	7,222	6,698	7,576	8,608	8,839	9,099	11,270	81.7
(GSL)	(6,200)	(7,150)	(6,497)	(7,260)	(8,143)	(8,328)	(8,330)	(8,976)	
(SLS)		(16)	(78)	(145)	(221)	(265)	(462)	(1,776)	
(PLUS)	(3)	(57)	(122)	(171)	(244)	(246)	(307)	(517)	
Subtotal	10,388	11,164	10,744	12,155	13,414	14,251	14,419	17,002	63.7
Specially Directed Aid									
Social Security	1,883	1,996	733	220	35	0	0	0	−100.0
Veterans	1,714	1,351	1,356	1,148	1,002	849	780	773	−54.9
Military	203	235	269	301	333	346	364	359	76.7
Other Grants	121	109	89	65	64	68	64	72	−40.1
Other Loans	62	109	216	263	327	372	315	234	277.2
Subtotal	3,988	3,799	2,662	1,996	1,760	1,635	1,524	1,440	
Total Federal Aid	14,376	14,963	13,406	14,151	15,174	15,887	15,943	18,442	28.3
State Grant Programs	801	921	1,006	1,106	1,222	1,311	1,432	1,540	92.3
Institutionally Awarded Aid	2,060	2,247	2,507	2,881	3,221	3,674	4,056	4,565	121.6
Total Federal, State, and Institutional Aid	17,237	18,130	16,918	18,137	19,616	20,871	21,431	24,547	42.4

Notes

Several of the federally supported programs include small amounts of funding from sources other than the federal government. For example, College Work-Study (CWS) includes contributions by institutions, though most of the funds in the program are federal. Perkins Loans (until 1987 called National Direct Student Loans (NDSL)) are funded from federal and institutional capital contributions and collections from borrowers.

Federal State Student Incentive Grant (SSIG) expenditures are reported under federally supported aid and are excluded from state awards.

Guaranteed Student Loans (GSL), Parent Loans for Undergraduate Students (PLUS), and Supplemental Loans for Students (SLS) are programs which rely on private sources for their award funding. The federal government subsidizes interest payments and repays defaults. Amounts reported here represent loan commitments rather than actual amounts loaned, but the difference between the two is insignificant.

Veterans benefits are payments for postsecondary education and training to veterans and their dependents authorized under Chapters 30, 31, 32, 34, 35, and 106 of the U.S. Code. These are often referred to as "readjustment benefits" because they are designed to reacclimate veterans to civilian life.

Military expenditures for education are reported for three types of programs: the Armed Forces Health Professions Scholarship program, Reserve Officers' Training Corps programs for the Air Force, Army, and Navy, and higher education tuition assistance for the active duty Armed Forces.

Other grants include Higher Education Grants for Indian Students, Fellowships for Indian Students, American Indian Scholarships, National Science Foundation pre-doctoral fellowships (general graduate and minority programs), National Health Service Corps Scholarships (discontinued in 1988), National Institutes of Health predoctoral individual awards, Nursing Fellowships, Indian Health Service Scholarships, fellowships awarded through the Council on Legal Educational Opportunity, and the Jacob K. Javits Fellowship Program.

Other loans include amounts loaned under the Health Professions Student Loan Program, the Health Education Assistance Loan Program, and the Nursing Student Loan Program.

Institutional awards include, in addition to institutionally funded aid, scholarships, fellowships, and trainee stipends from government and private programs that allow the institution to select the recipient. Estimates of institutionally awarded aid in 1986–87 and 1987–88 assume a yearly eight percent rate of growth in addition to inflation.

Table 2. Aid Awarded to Postsecondary Students in Constant 1982 Dollars (in Millions)

Federally Supported Programs	1980–81	1981–82	1982–83	1983–84	1984–85	1985–86	Estimated 1986–87	Estimated 1987–88	Percent Change 80–81 to 87–88
Generally Available Aid									
Pell Grant	2,660	2,358	2,377	2,648	2,768	3,163	2,986	3,116	17.1
SEOG	410	371	337	342	341	364	347	330	−19.5
SSIG	86	79	72	57	69	67	63	63	−26.2
CWS	736	640	604	648	589	582	556	554	−24.7
Perkins Loan (NDSL)	773	595	587	647	618	623	663	711	−8.0
Income Contingent Loan								4	
GSL, PLUS, and SLS	6,913	7,407	6,584	7,183	7,856	7,838	7,893	9,393	35.9
(GSL)	(6,910)	(7,332)	(6,387)	(6,884)	(7,431)	(7,385)	(7,226)	(7,481)	
(SLS)		(16)	(77)	(137)	(201)	(235)	(401)	(1,480)	
(PLUS)	(3)	(58)	(120)	(162)	(223)	(218)	(266)	(431)	
Subtotal	11,577	11,449	10,561	11,525	12,241	12,638	12,507	14,171	22.4
Specially Directed Aid									
Social Security	2,099	2,047	721	209	32	0	0	0	−100.0
Veterans	1,911	1,385	1,333	1,088	915	753	677	645	−66.3
Military	227	241	265	285	304	307	316	299	32.1
Other Grants	135	112	87	62	58	60	56	60	−55.2
Other Loans	69	111	212	250	298	330	273	195	182.0
Subtotal	4,356	3,804	2,513	1,777	1,470	1,297	1,168	1,054	−75.8
Total Federal Aid	16,022	15,345	13,178	13,417	13,847	14,088	13,829	15,370	−4.1
State Grant Programs	893	945	989	1,049	1,115	1,162	1,242	1,284	43.8
Institutionally Awarded Aid	2,296	2,304	2,464	2,731	2,939	3,258	3,518	3,805	65.7
Total Federal, State, and Institutional Aid	19,210	18,593	16,631	17,198	17,901	18,509	18,589	20,459	6.5

Note

Constant dollar figures are based on data in Table 1. For an explanation of constant dollar conversions, see page 14.

Table 3. Grants, Loans, and Work in Current and Constant 1982 Dollars (in Millions) and as a Percentage of Total Aid

Current Dollars

	1980–81	1981–82	1982–83	1983–84	1984–85	1985–86	Estimated 1986–87	Estimated 1987–88
Grants	9,618	9,595	8,793	8,933	9,359	10,301	10,612	11,521
Loans	6,958	7,911	7,510	8,521	9,612	9,914	10,179	12,362
Work	660	624	615	683	645	656	641	665
Total Aid	17,237	18,130	16,918	18,137	19,616	20,871	21,431	24,547

Constant 1982 Dollars

	1980–81	1981–82	1982–83	1983–84	1984–85	1985–86	Estimated 1986–87	Estimated 1987–88
Grants	10,720	9,840	8,644	8,470	8,541	9,135	9,205	9,602
Loans	7,755	8,113	7,382	8,079	8,772	8,792	8,829	10,303
Work	736	640	604	648	589	582	556	554
Total Aid	19,210	18,593	16,631	17,198	17,901	18,509	18,589	20,459

Percentage

	1980–81	1981–82	1982–83	1983–84	1984–85	1985–86	Estimated 1986–87	Estimated 1987–88
Grants	55.8	52.9	52.0	49.3	47.7	49.4	49.5	46.9
Loans	40.4	43.6	44.4	47.0	49.0	47.5	47.5	50.4
Work	3.8	3.4	3.6	3.8	3.3	3.1	3.0	2.7
Total Aid	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Notes

Based on data from Table 1.

The category "grants" includes Pell Grants, SEOG, SSIG, Social Security Benefits, Veterans Benefits, Other Grants, State Grant Programs, and Institutionally Awarded Aid. "Loans" includes all remaining programs except CWS, which makes up the "work" component.

Table 4. Number of Recipients and Aid Per Recipient (in Current and Constant 1982 Dollars)

	Pell Grant Program			SEOG Program		
	Recipients	Aid per Recipient		Recipients	Aid per Recipient	
	Number (000)	Current Dollars	Constant Dollars	Number (000)	Current Dollars	Constant Dollars
1980–81	2,708	881	982	717	513	572
1981–82	2,709	849	870	659	549	563
1982–83	2,523	958	942	641	535	526
1983–84	2,759	1,012	960	649	557	528
1984–85	2,747	1,104	1,008	652	573	523
1985–86	2,813	1,268	1,124	686	598	530
1986–87	2,732	1,260	1,093	631	633	549
1987–88 (est.)	2,862	1,306	1,089	660	600	500

	CWS Program			Perkins Loan (NDSL) Program		
	Recipients	Aid per Recipient		Recipients	Aid per Recipient	
	Number (000)	Current Dollars	Constant Dollars	Number (000)	Current Dollars	Constant Dollars
1980–81	819	806	898	813	853	950
1981–82	739	844	866	684	848	870
1982–83	720	854	839	675	884	869
1983–84	772	886	840	719	949	900
1984–85	735	877	800	697	971	886
1985–86	728	901	799	701	1,003	889
1986–87	700	915	794	716	1,067	925
1987–88 (est.)	738	900	750	814	1,048	873

	GSL Program			PLUS Program		
	Recipients	Aid per Recipient		Recipients	Aid per Recipient	
	Number (000)	Current Dollars	Constant Dollars	Number (000)	Current Dollars	Constant Dollars
1980–81	2,904	2,135	2,379	1	2,500	2,786
1981–82	3,135	2,280	2,339	22	2,541	2,606
1982–83	2,942	2,208	2,171	49	2,505	2,463
1983–84	3,147	2,307	2,188	66	2,596	2,461
1984–85	3,546	2,297	2,096	93	2,636	2,405
1985–86	3,536	2,355	2,088	93	2,647	2,348
1986–87 (est.)	3,499	2,381	2,065	112	2,744	2,380
1987–88 (est.)	3,548	2,530	2,109	176	2,933	2,445

	SLS Program			State Grant and SSIG Programs		
	Recipients	Aid per Recipient		Recipients	Aid per Recipient	
	Number (000)	Current Dollars	Constant Dollars	Number (000)	Current Dollars	Constant Dollars
1980–81	0	0	0	1,140	770	858
1981–82	7	2,334	2,477	1,448	689	707
1982–83	31	2,524	2,524	1,493	723	711
1983–84	56	2,582	2,501	1,528	763	724
1984–85	84	2,631	2,445	1,580	822	750
1985–86	100	2,641	2,369	1,543	899	797
1986–87 (est.)	169	2,729	2,403	1,552	970	841
1987–88 (est.)	611	2,906	2,468	1,580	1,023	852

Notes

est. = estimated.

To estimate the quarterly participation in PLUS and SLS in academic years 1983–84 through 1985–86, we assume PLUS and SLS each had the same average award per quarter in FY84 and FY85 as their combined total average award. We derive the numbers of participants from this average award and from quarterly award amounts for each program.

SYMBIOSIS: THE HIGH SCHOOL PARTNERSHIP PROGRAM

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Introduction

Symbiosis is the biological condition whereby two organisms evolve a dependency on each other that is mutually **beneficial**. This is the important part of the relationship. Given certain demographic conditions in our present society--an increasing age swell in the over-forty range due to the baby boom of the post- World War II years and the baby bust of about ten years ago that has caused a decline in the now secondary school and soon-to-be traditional college-age population-our higher education systems, probably our primary and secondary education systems as well, need to think about such relationships.

The High School Partnership Program, as developed by the Connecticut Community Colleges, is a logical component of the community college philosophy of providing postsecondary education to all who could benefit from it. The unique aspect of this program is that it is aimed primarily at those students who are **not** at the top of their classes. The Partnership Program is intended to involve more students than existing programs for the gifted; it is designed for the student who is not sure about college, its demands, its commitments on a student's educational responsibilities. Eligibility for the program is dependent upon a minimum scholastic average of 80 percent and upon the recommendation of the high school's principal and program coordinator.

In June 1987 the Board of Trustees for Regional Community Colleges in Connecticut authorized each community college to enter into partnership agreements with the superintendents of the public school districts in their respective service areas (see APPENDIX 1). These arrangements would allow high school seniors and juniors to enroll in credit courses offered by the community college. The anticipated outcome--the development of stronger linkages between the area high schools and the community colleges. The hook--the community college would pay the cost of tuition and fees would be waived; **and** the courses would fulfill both high school graduation and college program requirements. The student or the school district would be responsible for books and transportation costs.

The Program at South Central

South Central Community College entered into partnership agreements with four school districts in its service region during the summer of 1987. The president of the college contacted the superintendent of each school district in the service area and explained that, at no charge to either the student or the district, high school juniors and seniors with a B average or higher could enroll in any regularly scheduled credit courses at South Central in the fall semester. After a contact in the superintendent's office was named, the College's director of admissions explained the procedure: one counselor from each high school would identify the students and send their names and addresses to the college; the **president** then sent a letter to the **parents**, congratulating them and asking them to contact the school counselor for an application and recommendation. The counselor then scheduled an orientation session with the students and parents; either the president or the director of admissions attended as well. After the College received the completed application and recommendation, the students were invited to register for courses. [They also had the advantage of advanced registration sessions--after continuing, matriculated students--and not having to brave the crowd during open registration.]

Fall 1987

During fall 1987, 142 students from eight high schools in four towns enrolled in 34 different courses; nine students enrolled for more than one course. No limit on the number of credits was established in the agreement. Almost 80 percent of the students were female (compared to the college's 70 percent female population); almost 46 percent were black (v. 21 percent for the student body), 40 percent white (v. 66 percent) and almost 8 percent hispanic (v. 7.3 percent). Other or No Response accounted for the remaining students. [See APPENDIX 2 for tabular statistical information for each semester.]

While more than half the students (54.0 percent) performed at a better than satisfactory level (C or higher), there was concern about the one-third who either withdrew or did not show for classes. College officials felt that some students might not have been sufficiently prepared for the courses in which they enrolled. Beginning in spring 1988, high school partnership students were given reading placement tests before registration (as is the policy for regular enrollees); further, depending on the courses for which they were enrolling, English and/or mathematics placement tests would also be administered (again, standard College policy). An analysis of the spring grades showed that less than 28 percent of the students either withdrew or did not show for classes; 56.3 percent completed their courses with grades of C or higher.

Spring 1988

Ninety-nine students participated in the high school partnership the during spring 1988 from 15 high schools: 33 students continuing from fall to spring and 66 new students enrolled in 36 different courses; 14 enrolled in more than one course. The same procedure for selection was maintained from fall.

Fifty-five students (50.5 percent of those not returning) responded to surveys indicating reasons why they did not return in the spring and what their plans for college were (see APPENDIX 3). Thirty-seven respondents were seniors and 18 were juniors, all of whom said they have already enrolled or planned to enroll at another college. The most important reason most often selected for not returning was *other responsibilities became too great* (10: 3 seniors, 7 juniors), followed by *could not work and go to school at the same time* (9: 6 seniors, 3 juniors) and *achieved academic goals* (8: 5 seniors, 3 juniors). The second most important reason most often selected was, again, *other responsibilities became too great* (11: 8 seniors, 3 juniors) followed by *achieved my personal goals* (6: 5 seniors, 1 junior). Informal discussions between students and the director of admissions indicated that the other responsibilities were their high school courses: they were just over-extended.

Females constituted 75 percent of the high school partnership students enrolling in spring 1988; 28 percent were black, 49 percent were white and 20 percent were hispanic. This is attributable to the fact that most of the new students came from suburban high schools; the return rate from the New Haven high schools was only 12 percent.

Fall 1988

In its third semester of operation, the High School Partnership program enrolled 144 students: 132 new students, 12 returning (10 for a second semester, two for a third). Thirteen high schools were involved, three for the first time. The agreement was expanded, as well, to include non-public schools. Students enrolled in 46 different courses; seven students enrolled for more than one course. Seventy-six percent are female; more than two-thirds are white, 25 percent are black and four percent are hispanic. Again, suburban towns increased their participation; the New Haven school district did not actively participate.

In a program of this sort, a college also expects to receive some dividend for the time and effort expended. Nine students who participated in the High School Partnership Program during fall 1987 and/or spring 1988 enrolled as either full-time or part-time degree seeking students in fall 1988: a **4.3 percent** return on investment.

Conclusions

It appears that the program is fulfilling its objectives. During fall 1987, the first semester of the program, only South Central, of all the community colleges in Connecticut, recruited for the program. All 12 community college participated in spring 1988. Particularly for South Central, even though the number of participants declined by 30 percent from fall to spring, participation increased again the following fall. Spring 1989 enrollment will be watched closely to ascertain if this may be a developing trend (high fall, lower spring, as with regular college enrollment patterns) or just the newness of the program. In all, 339 students have participated in the program to date. Also, the number of participating high schools increased from fall to spring and three new schools were added in fall 1988. More than half the students in both fall 1987 and spring 1988 received grades of C or higher. These grades can be satisfactorily applied to high school graduation requirements, applied to degree program requirements or electives at South Central Community College or transferred as requirements or electives to most four-year colleges and universities.

Implications

The success of the High School Partnership Program has three primary implications: provide an early postsecondary education opportunity for a high school population that is usually not recognized, i.e., those who are not included in programs for "exemplary" students; permit some students who might have some trepidation toward attending college "try it for free;" and, in times when the number of high school graduates is declining (and this trend should continue for the next six years), allow the college to "recruit:" students may decide to enroll in a degree program after they graduate from high school. A secondary implication is that the High School Partnership Program serves to strengthen interinstitutional cooperation between the community college and the school districts. This type of a program could lead to a multitude of faculty exchanges, a better understanding of what is required in college that will hopefully assist the school districts in assessing their curricula, and the development of 1+1 or 2+2 programs with the districts for certificate or degree programs.

This project is the beginning of a longitudinal study for each semester the partnership agreement is in force.

APPENDIX 1

Board of Trustees Policy
Community College - High School Partnership Program

The board of trustees approves the establishment of community college-high school partnerships program as outlined below and authorizes the executive director to implement administrative policies and procedures necessary for the operation of the program. The executive director is authorized to allocated an amount not to exceed $50,000 from the resources of the tuition fund to support the cost of tuition for high school students in the program in the 1987-1988 fiscal year.

Community College - High School Partnerships Program

In August 1986, the national governors association issued a comprehensive report on education at all levels in the nation. One concern expressed in the report addressed the conviction that educational effectiveness and responsiveness are best achieved when students have choices about the programs and institutions they will attend. While making a number of recommendations concerning the expansion of choice for students, one which is of particular interest to the community colleges concerns a call for states to expand opportunities for high school students to attend accredited public postsecondary degree-granting institutions during their junior and senior years.

Such opportunities can provide especially talented high school students with more challenging educational experiences than may be available in high school. Particularly for such students in school districts which are unable to provide a broad range of course options, being able to enroll in a community college course can benefit both the student and the school district by making those options available. For capable students who may be turned off by high school, having the option to enroll in a college course or two, perhaps to meet high school graduation requirements, may prove an incentive to remaining in high school to graduate rather than dropping out.

Community colleges can benefit from such a program by providing opportunities to make high school students more aware of the range of community college programming available to them after high school as well as by offering the possibility for high school students to design a coherent program combining the junior and senior years of high school with the first two years of college to prepare for immediate employment opportunities after earning an associate degree.

In furtherance of the goal of expanded educational opportunity for high school students through increased educational choices, the community college-high school partnerships program is established. In the implementation of the program, it is intended to go beyond traditional programs which concentrate primarily on serving gifted high school students. Rather, it is intended that the community college-high school partnerships program be more expansive in providing an early college experience to a more diverse group of high school students, consistent with the mission of the community colleges.

Admission of high school students to community college classes under the community college-high school partnerships program shall be accomplished consistent with the following guidelines.

1. Each community college, acting through the president, may enter into written agreements with (a) the superintendents of schools of area school districts, (b) the directors of state regional vocational-technical high schools, and (c) the administrative heads of parochial high

schools for the admission of high school students to community college classes. For the purposes of this program, high school shall include any local or regional high school and those incorporated or endowed high schools or academies operating as quasi-public institutions under sections 10-34 through 10-36 of the Connecticut general statutes and any nonprofit, nonpublic secondary parochial school approved by the state board of education, provided that no such community college classes may be held at a parochial school.

2. Commonly accepted admissions guidelines must be established by the community college and the school district, within the following parameters:
   a. Juniors and seniors with a minimum of eighty percent scholastic average will be eligible for admission.
   b. Final selection will be based on the recommendation of the high school program coordinator and the principal.
   c. With the recommendation of the school principal, a flexible interpretation of the minimum scholastic average will be permissible.

3. The school district may offer concurrent or supplemental high school credit for coursed taken at a community college in accord with program guidelines.

4. High school students admitted to the program will be eligible to enroll in a maximum of two community college credit courses each semester on a space-available basis following the initial registration period for that semester. In the case of high school seniors in their last term, the two-course limit may be exceeded on the recommendation of the school principal.

5. The community college must make provision for academic advisement and other appropriate supportive services for the participants in the program.

6. The community college should utilize the preregistration process to assist participating high school students to make their preliminary selection of community college courses when they are preparing their high school schedules for the forthcoming term.

7. The community college may provide courses which would be of interest to high school students at existing off-campus sites in order to increase access to the program for high school students lacking transportation.

8. The community college should attempt to schedule sufficient courses at times convenient for high school students to attend college classes (e.g., late afternoons, evenings, and Saturdays).

9. The community college will pay the costs of tuition for the high school students participating in the program and will waive all fees.

10. Community college-high school partnerships program tuition will be paid for general fund credit courses only; extension and non-credit course costs will not be supported through the program.

11. The school district and/or the participating students will be responsible for the cost of books and transportation. The school district will be encouraged to purchase books to loan or give to participating students.

12. Subject to the limitation on the number of high school students who may be admitted to an individual community college within the program resources available to the system as a whole, the community college and the school district should agree upon the total number of participating students prior to the beginning of each semester.

(Adopted June 15, 1987; amended
February 22, 1988)

APPENDIX 1A
Facsimile Letter to Superintendents of Schools

Superintendent of Schools
[ ], CT

Dear :

As I recently shared with you, the Regional Community College System has developed a High School Partnership Program. I am enclosing a copy of the program as approved in a recent meeting of the Board of Trustees of Regional Community Colleges.

Dr. Joseph E. Magyar, our Director of Admissions, is the person responsible for the program and has already had initial discussions with your coordinator, [ ]. We at South Central are very excited about the opportunity this program will provide both our institutions in better serving students from the [ ] area. I look at this opportunity as the beginning towards a long-lasting cooperative relationship between our systems.

I wish you an enjoyable summer and I am sure we will be discussing this issue as the program progresses.

Sincerely,

Antonio Perez
President

APPENDIX 1B

Facsimile Letter to Parents
[Separate letters sent to daughters and sons]

Dear Parent:

In recognition of your daughter's/son's academic achievement, her/his counselor at [ ] High School has identified her/him as eligible to receive a scholarship, under the High School Partnership Program, to attend South Central Community College.

This scholarship is for the Fall 1987 semester and covers all tuition and fees. We are pleased to provide this opportunity for your daughter/son to continue to challenge herself/himself as well as get a head start on her college education. If she/he wishes to take advantage of this exceptional opportunity, she/he should contact her/his counselor at [telephone #].

As a parent you should be proud of your daughter's/son's academic success and continue to challenge her/him to achieve at a higher level. We look forward to having her/him take advantage of this opportunity and seeing her/him this fall.

Sincerely,

Antonio Perez
President

APPENDIX 2

Statistical Information

	Item	Fall 87	Spring 88	Fall 88
Enrollment	Total	142	99	144
	New	142	66	132
	Continuing	0	33	12
Sex	Female	112	76	109
	Male	30	23	35

	Item	Fall 87	Spring 88	Fall 88
Courses	Office Administration	9	7	2
	Physics	1	4	0
	Political Science	1	0	5
	Psychology	19	32	41
	Reading	1	6	1
	Sociology	4	1	2
	Spanish	0	0	2

APPENDIX 3

Questionnaire for Former Partnership Students

1. The decision to leave a particular college can be motivated by a variety of reasons. Please circle the letters of all the reasons that contributed to your decision to leave our college. **[Composite of all reasons of all respondents.]**

Academic Reasons

A. achieved my academic goals **(13)**
B. needed a break from college **(13)**
C. dissatisfied with my academic performance **(7)**
D. dissatisfied with the quality of teaching **(6)**
E. dissatisfied with the learning environment **(5)**
F. course work not what I wanted **(13)**
G. unsure of my academic goals **(7)**

Other Reasons

H. achieved my personal goals **(8)**
I. accepted a job **(7)**
J. college experience not what I expected **(3)**
K. few people I could identify with **(3)**
L. moved out of the area **(0)**
M. could not work and go to school at the same time **(19)**
N. other responsibilities became to great **(25)**
(could not go to high school and college at the same time)
O. personal problems **(4)**
P. transportation **(7)**
Q. other **(9)**

2. From the list of reasons in question 1, please select the three most important reasons and enter their codes below.

|_N_| Most Important |_A_| Second Most Important |_M_| Third Most Important

3. Do you currently have plans for additional education?

0. not at this time **(4)**
1. yes, I plan to re-enroll at this college **(0)**
2. yes, I have already enrolled at another college **(27)**
3. yes, I plan to enroll at another college **(22)**
4. I am currently undecided about any additional education **(1)**

B. If you circled responses 2 or 3, please write in the name of the college you plan to attend or are attending.____

INSTITUTIONAL RESPONSES TO STATE MANDATES FOR OUTCOMES ASSESSMENT: STRATEGIC CHOICE BASED ON RATIONALITY, BUREAUCRACY, AND POLITICS

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Graham Allison, in his volume, Essence of Decision, applied three diverse decision-making models or "conceptual lenses" to the Cuban Missile Crisis. These three paradigms: a rational actor model, an organizational process model, and a political model, can be used to study decision-making in any organization. This paper applies the paradigms to one institution's choice of a strategic response to a state mandate for outcomes assessment.

Organizational Setting

The institution under consideration is a public, comprehensive four-year institution which enrolls approximately 7800 students of whom 90% are traditional undergraduate students. The College offers bachelor's degree programs in Arts and Sciences, Education, Business, Technology, and Nursing.

This institution shares the history of many of its peer state colleges--a teacher training institution which emerged as a mid-sized comprehensive college by the mid-1970's. Faced with the prospect of a decreasing pool of college-bound students from which to select, the college chose to deliberately limit enrollments and raise admission standards. The academic profile of the entering freshmen has steadily improved. A focus on increasing minority enrollments has resulted in a proportionally greater percentage of Black and Hispanic students. As the quality and diversity of the student body has increased, pressure to improve the quality of offerings has also intensified.

The state has viewed the evolving nature of the college positively and has been supportive of efforts to upgrade all of the state colleges, including through the provision of financial resources. Most of the state colleges have received multi-million dollar Challenge grants, as they were termed by the Governor. The college received a Challenge grant of almost three million dollars which is in its final year of implementation.

A second contextual factor worth noting is recently passed autonomy legislation. In 1986, the governor signed legislation that granted the state colleges operational autonomy similar to that of other public senior institutions. The Board of Higher Education is overseeing the transition to full autonomy.

Just as the state has increased both available funding and operational autonomy for the state colleges, it has also aggressively pursued the issue of accountability--asking for evidence of outcomes from its public institutions. Basic skills assessment has long been a requirement in New Jersey. The move for broader assessment began in 1985 when the Board of Higher Education created the College Outcomes Evaluation Program (COEP) to demonstrate to decision makers and the public the contributions of higher education. An advisory committee was appointed to build a framework for assessment and solicit input from the higher education community. Four sub-committees were formed to develop recommendations for assessment of: student learning; student development/post-collegiate activities; research, scholarship and creative expression; and community and society outcomes. In 1986, the College Outcomes Evaluation Program sponsored a state-wide conference on outcomes assessment. The Advisory Committee reported its initial set of recommendations to the Board of Higher Education in 1987.

While the college conducts follow-up placement surveys of its graduates and examines the pass ratio of students on various licensure examinations, outcomes assessment as defined by COEP is not existent. General education and general intellectual skills are not assessed and academic study within the major is assessed in only a rudimentary manner. To meet the state requirements, the college must develop instruments, interpret the collected data, and use the findings.

A few of the state colleges have begun to aggressively seek out and produce the requested data. Most, however, have made limited efforts. The state has deemed this as a period of planning and initial implementation for the state colleges. To date, planning is occurring but implementation is not immediate.

To simply be immersed in this unfolding event is educational in and of itself; to examine it through each of Allison's conceptual lenses offers an enriching appreciation of the variety of factors affecting the decisions being made at the College about responding to the call for outcomes assessment.

Application of the Rational Actor Model

According to Allison's rational actor model, the organization is one unified actor. The institution is thus considered as a single actor responding to the actions of the state of New Jersey. This model proposes that in making decisions, the actor (in this case, the college) gathers all available information to make a rational choice between alternative courses of action.

The information is examined in terms of potential consequences likely to accrue from adoption of each alternative and a choice is made based on cost-effectiveness.

The rational actor model has as its basis Taylor's (1911) work on scientific management and Fayol's (1949) administrative principles. According to Gore and Silander (1959), the rational model was evident during the World War II when a quantitative approach to solve war effort problems was employed by economists, statisticians and industrial engineers.

In more recent times, theoriticians have attributed far less rationality to the process of decision-making in organizations. Simon (1957) was among the first to recommend a concept of "bounded rationality," an acknowledgment that decisions are not made on the basis of pure rationality but are subject to constraints on available information. Cohen, March and Olsen (1972) have even argued that rational decision making is not employed in any organization but that a "garbage can" model better describes how decisions are commonly made.

Even though recognized limitations to pure rationality in decision making exist, the rational paradigm has utility. The issue in this case is how the college can best respond to the state's mandate that the institution assess student outcomes. Supplemental to the issue is concern with maintenance of operational autonomy and good fiscal health through continuation of desired funding through the State. In responding to the State's mandate, the college has three basic alternatives:

(1) Move quickly ahead to begin outcomes assessment as mandated by the state following the example of fellow state col-

leges. Should the college elect this alternative, the State may view the efforts favorably and operational autonomy and supplemental funding could be expected to be maintained. Conversely, if the results of such assessment reveal deficiencies in the production of outcomes (as defined by the State), the institution might expect to find punitive measures forthcoming. The college has developed a reputation for bringing in strong inputs and offering a strong process. If the results of outcomes assessment indicate that the level of outcomes are not the level expected given the reputation of the inputs and process, negative effects might occur in the inputs phase.

(2) A second alternative would be to reject the proposal of the state mandate, arguing vociferously in opposition to the idea of state establishment of outcomes assessment methods for individual institutions. The potential benefit of this action would be postponement of the process. Costs, however, would be substantial with the state possibly reducing both operational autonomy and supplemental funding available to the institution.

(3) The third alternative would be to move into outcomes assessment with caution. The college could express its concern about a state-wide mandate of outcomes assessment while slowly commencing the process. The state might view such an effort somewhat negatively but would not likely cut off supplemental funding or reduce operational autonomy since the desire to participate had been expressed. Benefits of such an action might include more time for the institution to develop an assessment process molded to the institution's informational needs for self-improvement rather than a state accountability measure.

In making a decision of which choice to make among these three alternatives, delegates were sent to conferences on outcomes assessment to gather information. The College also knew from previous experience with Basic Skills Assessment that the state is usually successful on such issues. The costs of adopting a hostile stance, therefore, would probably be unbearable. The benefits of diving into the effort, on the other hand, were not justified in comparison to the possible costs of such an effort. The choice of the slow and paced alternative, from the rational actor model perspective, was therefore selected because it was found to be cost-effective, consistent with the college's goals and yet not threatening to the state.

Application of the Organizational Processes Model

Unlike the rational actor model, Allison's organizational processes paradigm reflects the components that make up an organization and allows for their separate functioning. Based upon Weberian (1947) concepts of bureaucracy, it supports the concept of an organization as a hierarchy with differential authority accorded to those lower in the chain of command. Members of the organization are divided by the labor they perform and each is technically competent in his or her area of work. The specialized structures of the organization bring different perspectives to the alternatives of choice in the decision-making process.

A primary consideration in this model is how structures within the organization affect the distribution of information to decision-makers. Much has been written about information and communication among and between organizational units. Hage (1980) supports the view that the hierarchial nature of an organization is positive to the coordination of communications. Conversely, Katz and Kahn (1978) have written extensively on how limited upward communications generally are. Guetzkow (1965) highlights the problems of omission and distortion which occur when information is transmitted upwards in an organization. Whether one views a hierarchial construction as conducive or harmful to the decision-making process, its influence on available information cannot be discounted.

The organizational structure of the college is similar in complexity to that of other institutions. In responding to the state's mandate for outcomes assessment, the decision process would require information from all academic departments, several committees including the General Education Advisory Committee, the Facilities Planning office, and offices within the Student Life component of the College. While the Basic Skills assessment process provides history of how units produce information to respond to a state mandate, the effort and interaction was of a far less magnitude to afford comparison.

Of central importance in this interaction are academic departments. Academic departments provide data to the Vice-President for Academic Affairs as a part of their self-study process for regular program review. The information required for outcomes assessment varies from previously produced data. Most academic departments do not provide capstone experiences and do not collect information on the outcomes of the departmental educational experience like that requested by the state. Furthermore, several department chairs have stated that their willingness to acquire and report the required information would be dependent upon forthcoming resources.

The implementation process has necessarily been slowed because of limited information. The administration has communicated to the academic departments the importance of the state mandate. The choices of the administration in responding to the state's request, however, have been limited by the sparse information made available by departmental units. Through the bureaucratic model, therefore, the decision to slow the implementation of outcomes assessment at the college can be explained as a result of dysfunctions of the hierarchy in communications, limiting the courses of action available.

Application of the Political Processes Model

Whereas the first lens examined organizations as unitary actors and the second considered organizations as composed of hierarchial units, this final lens will propose that organizations are hierarchial units with relative degrees of political influence. As the rational decision-making model came to be criticized for its deficiencies in explaining human behavior, other plausible explanations were sought. Power relations and their impact on decision-making were recognized by Cyert and March (1963) in their writing on political behavior and interest groups. Pennings and Goodman (1978) in recent literature have described in detail how "dominant coalitions" are formed within organizations and exercise power to affect decisions.

Each of the players (or units) within the political paradigm has a different type of power to affect the decisions made. A historical context of relations between faculty and administration is necessary in order to better comprehend the political processes. As at many institutions, relations between faculty and administration over the last decade have been strained. The decision to reduce enrollments was not received positively by a number of departments. Opportunities for promotion and for tenure decreased as the intention to hold hiring and tenure ratios constant became evidenced. Faculty union relations with the administration have not been positive. Two years ago, the faculty and administration jointly engaged in a Task Force on College Governance to discuss the lack of collegiality and poor relations between faculty and administration. The final proposal of the Task Force was rejected by the faculty.

Recognizing this latent and, on occasion, open conflict exists stages the setting for outcomes assessment implementation at the college. The majority of the work of outcomes assessment will reside with the faculty. They will be responsible for creating capstone experiences and developing instruments to assess learning within the major. Through committees, they will be responsible for determining outcomes and means of measuring outcomes of the new general education curriculum. And, ultimately, they will be held responsible for many of the indicators (e.g. general intellectual skills, program completion rates, licensure/certification exam results, and research activities). The administration will coordinate many of the activities of the academic departments and report on them to the state.

Each semester, all department chairs, deans and the Vice-President meet at an Academic Leaders Retreat. Last Fall, the Vice-President invited the Director of COEP and the chair of the Student Learning Outcomes Subcommittee to speak. Department chairs were introduced to the proposed initiatives and their respective roles. The Vice-President thus allowed COEP, the source of the mandate, to describe the proposed program, rather than permitting a view to develop that outcomes assessment was a form of administrative control.

The session at the Academic Leaders Retreat revealed for the first time the magnitude of faculty resistance to the effort. Department chairs returned counter-arguments to proposals of the two presenters and raised questions about test reliability and validity, the role of academic freedom in this process, the uses of the collected information, and the resources available to help them in the undertaking. Each department chair protected his or her particular parochial interests with strength, but as a group, they were clearly a "dominant coalition" in the language of Pennings and Goodman.

The slow development of voluntary compliance remains the focus of effort for this academic year. The Academic Leaders Retreat this Fall will again address outcomes assessment. While the Vice-President has the authority to order the process put in place, it would not be in his best political interest to do so. The state has urged that compliance be viewed not as a reporting requirement but as an active process for improvement of curriculum. Department chairs are also aware of the power they exert in the process of outcomes assessment. The deadline that will force the issue to resolution is approaching with plans to be in place by May and field-testing by May 1990. The political process model offers one explanation of the decision to delay implementation of the state's mandate--the political power at stake within the organization.

Conclusions

Large organizations have long been recognized as slow implementors of change. Kaufman (1971) described resistance to change as the result of perceived collective benefits of stability, calculated opposition to change by groups within the organization, and even an inability to change. The call for outcomes assessment by the state is clearly a call for change. The response to that call has been slow. Each of the lenses magnifies a different reason for the resistance. The rational actor model portrays the decision to slowly adopt the change as the result of findings of a cost-benefit analysis between alternative courses of action. The organizational processes model explains the choice as an outcome of systemic obstacles to change that inevitably occur within organizations. The political processes model proposes that the decision to delay a response to the mandate could be explained as a result of calculated opposition to change by groups within the organization.

Overall, of the three lenses, the political processes model describes the most influential reason for the resistance to change. However, none of the three models alone provides as complete an explanation as do the three models applied and the resulting explanations contrasted.

The paradigms, however, have utility not only in explanation of past decisions and actions but in the shaping of future decisions. As implementation of outcomes assessment continues, consideration of the rational choices and their associated costs and benefits, understanding of the organizational characteristics related to resistance to change, and recognition of the powerful political force brought to bear by faculty groups can precede, rather than follow, the process.

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Providing Distributed Access to Student Data Through the use of an Integrated Database System

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For the past several years, I have served as analyst on a project to develop an integrated student database for the academic schools at the National Technical Institute for the Deaf (NTID), one of the colleges of the Rochester Institute of Technology (RIT). The purpose of this database is to provide faculty and counselors who are in the "front lines" of student interaction timely access to accurate student status and history information.

Student information is generated by academic department through administrative forms processing. However, as generally happens in college situations, this data is actually collected and managed elsewhere, in our case by NTID Student Records and the RIT Registrar's Office. As a result, the people who actually work with students often have limited access to their own data by being forced to wait for periodic reports received from these other areas, or to wade through copies of paperwork in student folders. Unfortunately, over time, the natural tendency of established reporting cycles is to not meet the information needs and timing requirements of their users. So in an attempt to better satisfy these needs, the NTID academic departments began setting up their own student databases. As a result, they became entangled in the extra work and difficulties of reprocessing data officially managed elsewhere in the institute. Ignoring problems with inconsistencies between official and departmental data, this practice is very inefficient from an institute standpoint. For academic departments, time spent tracking down and managing information is time taken away from students. Plus these "islands" of student information do not provide the consistent information base which is so necessary in college situations. For example, when students change majors or matriculate in dual majors, both academic departments need to access the same student information. In addition, NTID, because of the special nature of its student body, has a large counseling support staff. Without a common source of student information, these counselors are often forced to chase down the academic chairs to get information. These activities slow down work flow, decision making, and waste time and energy that could be better spent on the students themselves.

As a solution to the information flow problems, the NTID School of Business Careers promoted the idea of an integrated student database. As the term "integrated" implies, this database pulls together student academic information from various sources around the institute: the academic departments, student counseling and advising, mathematics and English support services, the NTID Student Records Office, and the RIT Registrar's Office, and provides one centralized user access.

THE DEVELOPMENT PROCESS

Our project team consists of two analysts (one for user needs, and one for the computer hardware and software), representatives from each academic department, and our programming staff. We began the design and development with one academic school. Once the initial pilot was up, we encouraged other schools to join the project. This had the advantage of starting off with a smaller group of users so that the initial design could be determined quickly. However, we did worry about other schools not buying into the project. This turned out not to be a big problem. First, we emphasized in all demonstrations and training sessions that the design was only the "way the pilot is now, not the way the database has to be". The other schools accepted the pilot with the understanding that they could contribute to revisions. We encouraged them to voice their ideas and opinions which we recorded. And we have promised to discuss them when the database comes up for review. Second, we found that one school was very anxious to be involved, readily accepted the pilot, and thus carried others along in their enthusiasm. Naturally some people and schools tended to be more enthusiastic about this project than others. We simply focused on those individuals who were the most enthusiastic, and let them drive the development.

Occasionally, the development process tended to move too slowly for our technical staff. Since the database design was generated by faculty and counselors, our progress tended to be limited by the amount of time they had left over from their student responsibilities. Rarely could everyone attend meetings. In addition, faculty generally do not work between academic terms or during the summer. We kept the project moving with careful planning, and by presenting design options for discussion, rather than trying to generate ideas, at meetings.

THE DATABASE

Technical Specifications

The NTID Student Database pilot is currently running on a VAX 8350 in the RIT VAXCluster network. It is implemented in Ingres, a relational database management system (RDBMS) by Relational Technology, Inc. Ingres is a fourth-generation computer language which means that it provides relation-based, non-procedural access to data. The heart of Ingres is an application generator package. However, users can also generate applications with QUEL, SQL (both relational query languages), or by embedding QUEL commands in a variety of third generation computer languages such as COBOL. The product also includes a query interface for data retrieval and maintenance, a report-writer, a forms generator for setting up computer screen formats, and a graphics package.

Structure

The database was originally designed with five components: general student academic information (major, current status, placement tests, etc.), academic department-specific information (progress flags, placement tests, etc.), complete course and grade histories, counseling information (private notes, etc.), and coop and permanent placement information (employer, etc.). The pilot, which has been in testing for the past year and a half, contains all components except the job information. Since placement information comes from a non-academic area, it was decided to let it wait until all the academic components were implemented.

The database is designed primarily for academic chairs and counselors. They access the database through a specially designed menu which allows them to avoid interacting directly with Ingres. The database itself contains a mix of information. Data are extracted from official institute sources and input by the users. Student information can be retrieved using either student name, or student id. In general, only users who are directly responsible for a data item are able to modify it. However, individual fields may or may not be updatable depending upon both the original data source and the user view. Grades, for example, are the property of the RIT Registrar's Office, and are not updatable in the database (for security reasons). Academic status, on the other hand, is updatable.

The components above are actually organized into user views based upon the needs of the different people who access the database and the sensitivity of the data items themselves. A view is the predefined portion of a database shown to a given user. Every effort has been made to facilitate the free flow of information while maintaining necessary data security. Diagrams of the main menu screen and current views are included below. The views currently defined are:

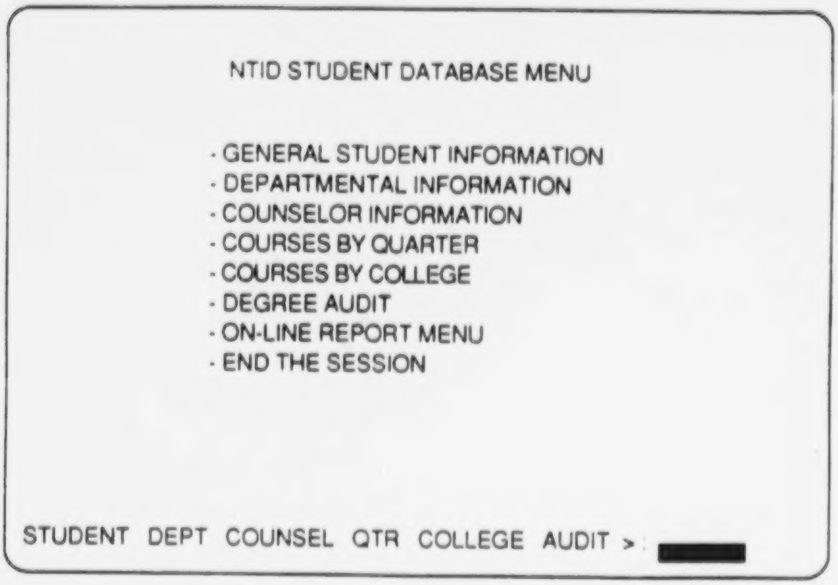
. General student academic information, considered to be non-sensitive and open to all database users, such as student names, current academic status, and major, etc.
. Department-specific information, such as probation information, and placement test scores; this view is intended for academic chairs, but counselors can access non-private portions on their students;
. Counseling information, access to which is limited to counseling faculty only;
. Student courses and grade histories, sorted either by quarter taken or academic area; this data is viewable by both academic chairs and counselors;
. A degree audit capability, which allow chairs and counselors to audit a student's courses against any major in the institute;
. And an online report generation option which allows users to run screen-versions of predefined reports on their students.

There are a small number of standard-schedule reports, such as quarterly counselor caseloads, and projected graduation lists. And users can request ad hoc reports. Users are also able to access the VAX electronic mail system directly from the database.

Security

In general, the database security is intended to allow users to see only the students for whom they are responsible. However, at user request, this was eased to allow the academic chairs to share portions of the departmental information, and counselors to share counseling-specific information across schools. Users were encouraged not to enter extremely private information.

Fig. 1 NTID STUDENT DATABASE MAIN MENU

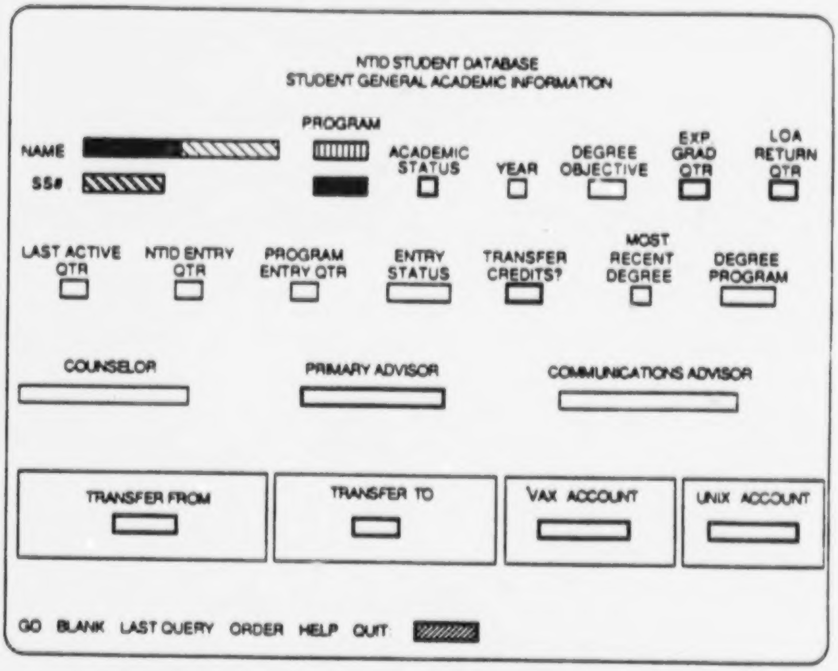


NTID STUDENT DATABASE MENU

- GENERAL STUDENT INFORMATION
- DEPARTMENTAL INFORMATION
- COUNSELOR INFORMATION
- COURSES BY QUARTER
- COURSES BY COLLEGE
- DEGREE AUDIT
- ON-LINE REPORT MENU
- END THE SESSION

STUDENT DEPT COUNSEL QTR COLLEGE AUDIT >

Fig .2 GENERAL SCREEN

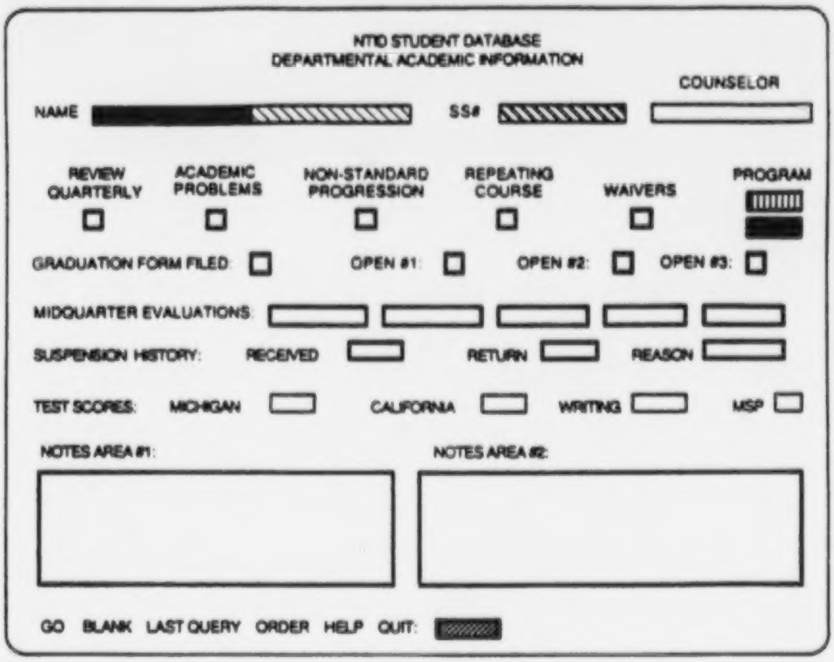


NTID STUDENT DATABASE
STUDENT GENERAL ACADEMIC INFORMATION

NAME
SS#
PROGRAM
ACADEMIC STATUS
YEAR
DEGREE OBJECTIVE
EXP GRAD QTR
LOA RETURN QTR
LAST ACTIVE QTR
NTID ENTRY QTR
PROGRAM ENTRY QTR
ENTRY STATUS
TRANSFER CREDITS?
MOST RECENT DEGREE
DEGREE PROGRAM
COUNSELOR
PRIMARY ADVISOR
COMMUNICATIONS ADVISOR
TRANSFER FROM
TRANSFER TO
VAX ACCOUNT
UNIX ACCOUNT
GO BLANK LAST QUERY ORDER HELP QUIT

KEY			
▧	PRIMARY RETRIEVAL KEY FIELD	▩	PROGRAM MASK OR COLLEGE SELECTION
■	LAST NAME RETRIEVAL FIELD	■	INGRES COMMAND FIELD
▧	FIRST NAME RETRIEVAL FIELD	░	SCROLLING FIELD
■	PRIMARY PROGRAM	☐	UPDATABLE FIELD
▥	SECONDARY PROGRAM	☐	NON-UPDATABLE FIELD

Fig. 3 DEPARTMENT SCREEN



NTID STUDENT DATABASE
DEPARTMENTAL ACADEMIC INFORMATION

NAME ▨ SS# ▨ COUNSELOR ☐

REVIEW QUARTERLY ☐ ACADEMIC PROBLEMS ☐ NON-STANDARD PROGRESSION ☐ REPEATING COURSE ☐ WAIVERS ☐ PROGRAM ▨

GRADUATION FORM FILED: ☐ OPEN #1: ☐ OPEN #2: ☐ OPEN #3: ☐

MIDQUARTER EVALUATIONS: ☐ ☐ ☐ ☐ ☐

SUSPENSION HISTORY: RECEIVED ☐ RETURN ☐ REASON ☐

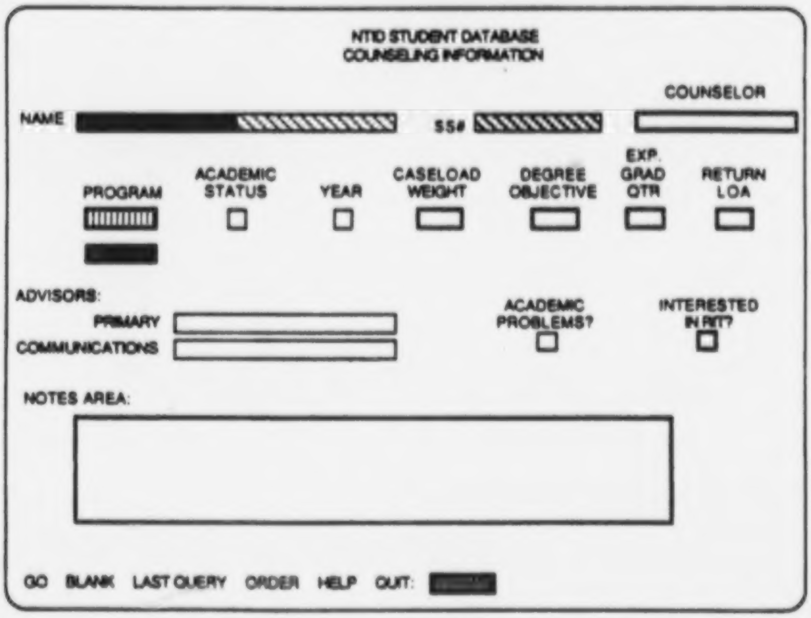
TEST SCORES: MICHIGAN ☐ CALIFORNIA ☐ WRITING ☐ MSP ☐

NOTES AREA #1: ☐

NOTES AREA #2: ☐

GO BLANK LAST QUERY ORDER HELP QUIT: ▨

Fig. 4 COUNSELING SCREEN



NTID STUDENT DATABASE
COUNSELING INFORMATION

NAME ▨ SS# ▨ COUNSELOR ☐

PROGRAM ▨ ACADEMIC STATUS ☐ YEAR ☐ CASELOAD WEIGHT ☐ DEGREE OBJECTIVE ☐ EXP. GRAD QTR ☐ RETURN LOA ☐

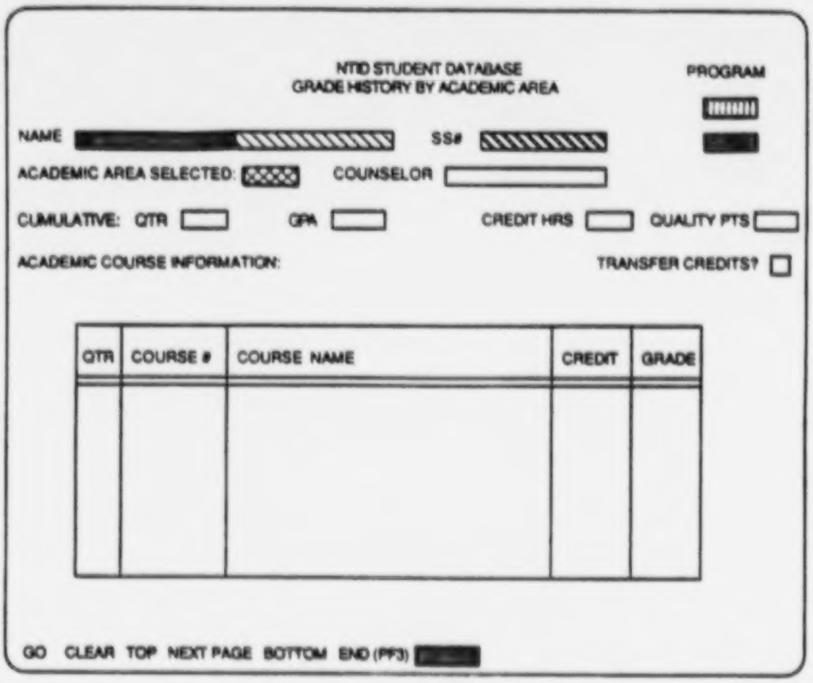
ADVISORS:
PRIMARY ☐
COMMUNICATIONS ☐

ACADEMIC PROBLEMS? ☐ INTERESTED IN RIT? ☐

NOTES AREA: ☐

GO BLANK LAST QUERY ORDER HELP QUIT: ▨

FIG. 5 COURSES BY ACADEMIC AREA



NTID STUDENT DATABASE
GRADE HISTORY BY ACADEMIC AREA

PROGRAM

NAME SS#

ACADEMIC AREA SELECTED: COUNSELOR

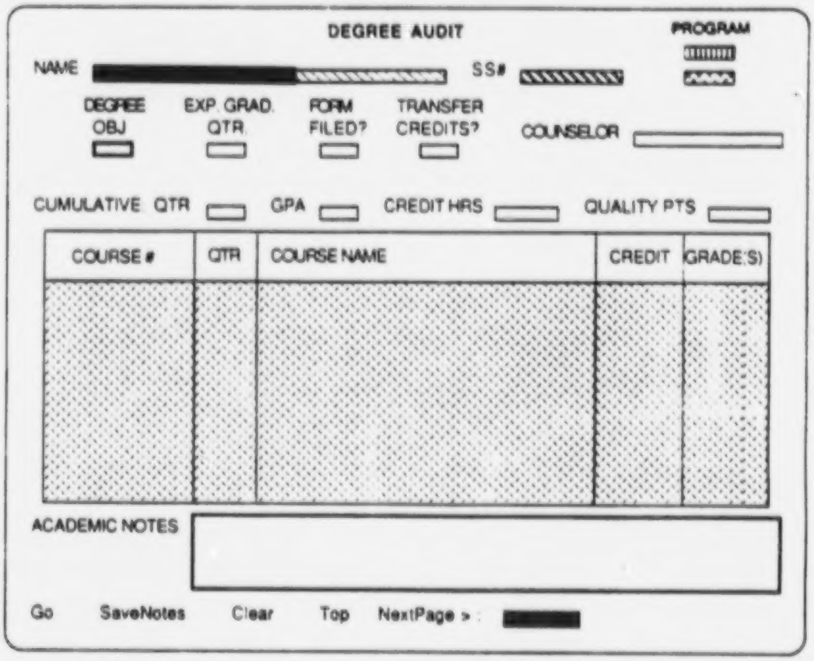
CUMULATIVE: QTR GPA CREDIT HRS QUALITY PTS

ACADEMIC COURSE INFORMATION: TRANSFER CREDITS? ☐

QTR	COURSE #	COURSE NAME	CREDIT	GRADE

GO CLEAR TOP NEXT PAGE BOTTOM END (PF3)

Fig. 6 DEGREE AUDIT SCREEN



DEGREE AUDIT

PROGRAM

NAME SS#

DEGREE OBJ EXP. GRAD. QTR. FORM FILED? TRANSFER CREDITS? COUNSELOR

CUMULATIVE QTR GPA CREDIT HRS QUALITY PTS

COURSE #	QTR	COURSE NAME	CREDIT	GRADE(S)

ACADEMIC NOTES

Go SaveNotes Clear Top NextPage > :

DESIGN AND DEVELOPMENT CONSIDERATIONS

This project has been under development for the past three years. During that time, we have struggled with many decisions and problems. In general, these can be put into three categories: software, hardware, and the design process itself.

Hardware

Our first development task was to determine which computer system to use for the database. Our choice was the RIT VAXCluster network because it is dedicated to academic use and is accessible from almost anywhere on campus. RIT has a mainframe IBM system, but it was already over loaded and over accessed. And a network of personal computers (PCs) alone would not provide the centralized data access we required.

We had several other hardware problems. First, our users had a variety of terminals and PCs they wanted to use to access the database on the VAX. However, Ingres requires specific key strokes to work correctly. We solved this problem by setting up "captive accounts" on the VAX for each Ingres user. When a user signs on he/she is asked to identify the type of equipment used, and a special command file for that equipment automatically sets up the correct communication procedure. Secondly, during development, the database was moved from a standalone VAX 750, where it was initially installed, to its current machine, a VAX 8350, which was added to the RIT network. Initially, the move seemed to go smoothly, but later we found space limitation problems caused by the network. So we had to increase all users' space allocations.

Software

RIT did not have a database package on its VAXCluster system when we started this project. So another team member and I attended a national symposium on databases and fourth generation languages to get acquainted with our options. There we attended presentations, talked with current users, and ultimately picked Ingres. Our reasons for selecting Ingres were first that the database is designed for both distributed access and distributed data storage, a good match for RIT's VAXCluster network of approximately 36 nodes. Both data access and application generation are conveniently menu-driven. The product line has full mainframe to microcomputer compatibility. And finally, that security is possible down to the field level.

Because of the variety of user hardware mentioned above, we were not able to settle on one terminal emulator package for PC users. So we ended up selecting a "best option" for each type of hardware, and documenting the signon procedure for each in our user's guide.

Naturally, Ingres itself gave us some problems. First it was too slow. And we had record access conflicts. Our technical people were able to reorganize the way the database tables were stored to resolve these. However the database still tends to be slow when doing a degree audit. Users will have to live with this because of the complicated logic and the large number of records to be processed. We also had problems implementing the database security. This turned out not to be as straight forward as it initially seemed. And it took some time and effort to get it set up correctly for all the views.

Design

For our database, we pull together data from sources institute-wide. Some fields are retrieved and updatable, others are retrieved but not updatable, while others are solely user input. For most data items, the database is not the primary data source. So, before beginning this project, we had to get agreements to share information. Then, we had to determine updatablity and update responsibility for each field. To do this we defined a data dictionary with field sources, values, and maintenance schedules. We also determined how long students should be maintained in the database, and under what conditions records should be removed. And special programs were written to load and maintain the database.

CONCLUSION

The database pilot is in its final stages of development and testing this academic year. If all goes according to schedule, we plan to have a user review and accept suggestions for revisions this coming spring. Two things that we know will come up are the postponed job placement information, and an academic planning component for counselors. Also we have found that for greater efficiency, we want to jump directly between views without going through the main menu which is not Ingres-standard. This will mean that we will need to write some of our own interface logic.

Overall the database has received a positive response from its users. Undoubtedly, this is mainly due to the heavy user involvement in its design. The two database components which have generated the most enthusiasm are the department-specific information and the degree audit logic. Both of these directly support better information sharing and improved service to students. These are both critical issues today when institutions are looking for ways to increase their student retention. Hopefully this database will support that effort at NTID.

GENDER DIFFERENCES IN FRESHMAN PERFORMANCE AND THEIR RELATIONSHIP TO USE OF THE SAT IN ADMISSIONS

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INTRODUCTION

In recent years it has been amply demonstrated (if inadequately explained) that women earn lower SAT scores but higher college GPAs than men. The purpose of this study is to explore the extent to which this is true at Rutgers-The State University of New Jersey, and its consequences for admissions.

No one has so far attempted to deny that there is a gap between males and females in their performance on the SAT. For Rutgers University as a whole, this gap averaged 59 points between 1981 and 1985: 7 points for the Verbal section and 52 points for the Math. In addition, means for both men and women and differences between them have increased somewhat over the five-year period. The debate has arisen over the causes of the observed gap, and the extent to which the use of SATs in the admissions process may put women at a disadvantage, since at many colleges and universities, including Rutgers, women tend to earn higher GPAs than men.

Clark and Grandy (1984) and Stewart (1987), the President of the College Board, attribute the females' large deficit on the mathematics portion of the SAT (SATM) and declining advantage in the verbal (SATV) in part to a significant increase in the number of women taking the test in the last 20 years, and to shifts in population characteristics of female test takers. Stewart points out that female test takers come from slightly less educated families and from families with lower median incomes. In addition, women take fewer courses in mathematics and in the physical sciences: "The more mathematics women study in high school, the better they do on the SAT mathematical section."

While some argue that gender differences in SAT scores are the result of biological or social differences between the sexes (e.g., Benbow and

Stanley, 1982; Goleman, 1987), others feel strongly that gender differences in SAT are largely attributable to bias in the test itself. Test anxiety, attitude toward mathematics, and social discouragement are also proposed as explanations for poor female performance on the mathematics portion of the SAT (Goleman, 1987; Levine and Ornstein, 1983; Dorans and Livingston, 1987, examined the question of whether females who score high on the SATM do so because they have very high verbal skills, but their results were inconclusive).

Some point to the fact that women tend to earn higher grades than men in both high school and college (see, e.g., Clark and Grandy, 1984) as evidence that the SATs are not an accurate indicator of female ability. According to Rosser (1987), "If the SAT predicted equally well for both sexes, girls would score about 20 points higher than boys, not 61 points lower." Several studies have shown that there is a higher correlation between SATs and freshman grades for women than for men, that is, females' grades are more predictible (Bejar and Blew, 1981; Linn, 1973). The underprediction of grades for women has a direct and negative effect on their eligibility for scholarships based on academic merit (Rosser, 1987).

Pallas and Alexander (1983) provided a test of the extent to which sex differences in the SATM may be due to differences in high school coursework. They found that there were no significant sex differences in certain background variables such as parents' education, race, or ninth grade quantitative test performance. By the end of high school, however, there was a decided female disadvantage in SATM performance of about 38 points. In addition, they found that females were much less likely than males to take certain higher-level math and science courses, but earned somewhat higher grades in the courses they did take. Ninth grade quantitative test performance was by far the best predictor of SATM performance, but when differences in math and science coursework were controlled, the male-female SATM difference shrank to about 14 points. Finally, their evidence suggests that if females had not outperformed males in the math courses they did take, the SATM gap would have been even greater than it was.

The purposes of the Rutgers study were, then, to document the SAT gap at the University (see above); to compare men and women in terms of cumulative freshman GPA and of freshman-year GPAs in humanities, social sciences, and math/science; to relate SAT scores to the various GPAs; and, by means of regression analyses, to consider the consequences of using the SAT scores in the admissions process.

METHOD

SAT and cumulative GPA information were taken from Rutgers University's undergraduate longitudinal files. In addition, separate GPAs were calculated for courses taken in humanities, social sciences, and math and science[1]. These subject area GPAs were unweighted in that each course counted as one unit, regardless of the number of credit hours associated with it (courses within each subject area had similar credit hour values).

The cohort under scrutiny consisted of students entering Rutgers College (the largest of Rutgers University's ten day undergraduate colleges) as new freshmen in the fall of 1985. In order to arrive at predicted GPAs (PGPAs), cumulative and subject area, for the 1985 cohort, the first-year grades of 1984 entering freshmen were regressed on their total SAT score; the coefficients from these 1984 regression equations were then used to calculate the PGPAs. [This is similar to the method used by the University Admissions Office, although, in fact, the University uses the two SAT scores separately, along with high school percentile Rank, to calculate an Admissions Index, which is but one of the factors considered during the admissions process. Use of the total SAT in this exploratory study simplifies understanding of the results.[2]]

Two regression analyses were performed on the 1984 freshmen: one for the total entering cohort, and separate ones for men and women. Thus each 1985 student had two sets of PGPAs: one using the coefficients from the total regression, and the other using the men's or women's coefficients as appropriate. The two freshman PGPAs were then compared to actual freshman CUM, and a difference score was calculated by subtracting the PGPA from the CUM. A positive difference score would indicate that CUM had been underpredicted, while a negative difference would imply overprediction.

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[1] An average was also calculated for Arts courses but was omitted from the analysis because very few students in the liberal arts colleges took any arts courses during their freshman year.

[2] The multiple correlation between freshman-year CUM on the one hand and SATV and SATM on the other is very slightly higher than the simple correlation between CUM and total SAT.

RESULTS

Rutgers College is the most selective of the University's undergraduate colleges, and this fact is reflected in the SATs of its students: for the 1985 cohort the mean total SAT was 1098 for the men and 1048 for the women, a 50-point difference: 12 points on the Verbal section and 38 on the Math. The Verbal gap is greater than that evident for the University as a whole, while the Math and total gaps are smaller.

GPA differences in favor of the women were observable by the end of the freshman year (Table 1). While there is a popular theory that women earn higher college GPAs than men because the latter take more of the difficult math and science courses, women outperformed men even within subject: women entering Rutgers College in 1985 had a significantly higher GPA than did men for the freshman year as a whole and in humanities courses. The women's math/science GPA was also higher, but not significantly so. It is true, however, that Rutgers women take more humanities courses and fewer math/science courses than men during their freshman year. (Freshmen at this college differ from those of other colleges in the University in that Rutgers College women do not take more social science courses as well.)

Plotting freshman CUM against total SAT reveals that there is indeed a stronger correlation between the two for women alone (r=.422) than there is for the group as a whole (r=.369) (and for the men separately--r=.353). This difference becomes particularly acute at the upper end of the SAT distribution, that is, the regression lines are very close together for most values of total SAT, but diverge as total SAT increases.

Table 2 adds to the comparisons shown in Table 1 the same comparisons for men and women in the top 10% of their respective SAT distributions (the cutoff being 1280 for men and 1230 for women). The difference between the male and female CUMs for the top 10% (the women's CUM being .26 higher than the men's) is more than twice the difference for the total cohort (.10). While the difference in Humanities GPA is somewhat larger for the restricted group, the most dramatic change is in Social Science GPA, going from .00 for the group as a whole to .30. The Math/Science difference is also larger, in favor of the women, but again non-

TABLE 1
Comparison of Male and Female SATs and GPAs
1985 Rutgers College Freshmen

	MEN	WOMEN	DIFFERENCE (W-M)
SATV	516	504	12 *
SATM	582	544	38 *
Total SAT	1098	1048	50 *
Total CUM	2.54	2.64	.10 *
Humanities GPA	2.73	2.91	.18 *
Social Science GPA	2.65	2.65	.00
Math/Science GPA	2.23	2.26	.03
# Human. Courses	2.6	3.1	.5 *
# Soc. Sci. Courses	3.2	3.1	-.1
# Math/Sci. Courses	3.0	2.4	-.6 *
N	952	1004	

* $p < .05$

TABLE 2
Comparison of Male and Female and GPAs
1985 Rutgers College Freshmen
in Top 10% of Respective SAT Distributions

	MEN	WOMEN	DIFFERENCE (W-M)
Total CUM	2.92	3.18	.26 *
Humanities GPA	3.11	3.37	.26 *
Social Science GPA	3.03	3.33	.30 *
Math/Science GPA	2.69	2.85	.17
# Human. Courses	2.7	2.9	.2
# Soc. Sci. Courses	3.2	2.9	-.3
# Math/Sci. Courses	3.1	3.0	-.1
N	112	106	

* $p < .05$

significant. Note that there are only minute sex differences in the number of courses taken in all three subject areas by freshmen in the top SAT range.

The differential slopes of the regression equations for the total group and for women as a whole can also be illustrated by looking at predicted levels of GPA for various values of total SAT (Table 3). Once again, it is evident that for each type of GPA the differences between the sexes grow as total SAT increases.

One other point is that the part-whole correlations of the subject area GPAs with freshman CUM also differ between men and women (Table 4): for men only and for the total group, the correlation is greatest with Social Science GPA, followed in order by Math/Science and Humanities averages. For women, however, the Humanities and Social Science correlations are identical, followed by Math/Science. This lends support to the idea that the women's advantage in total CUM is strongly related to their advantage in Humanities.

TABLE 4
Correlation between Freshman CUM and
Subject-Area GPAs

Correlation of CUM with:	MEN	WOMEN	TOTAL
Humanities GPA	.751	.805	.775
Social Science GPA	.823	.805	.813
Math/Science GPA	.818	.788	.801

To examine the effect of the underprediction for women on admissions decisions, the regression equations were solved backwards for SAT. This procedure answers the question, "To reach a given level of PGPA, what total SAT would have been required for all Rutgers College freshmen, and for women only?" The lefthand portion of Table 5 shows, for example, that the group as a whole would need an SAT total of 730 to achieve a PGPA of 2.0, while women would only need 720 if the original equation had been based on women alone.

The righthand portion of the table then looks at the women who were admitted to Rutgers College in 1986 to see how many of them would have been affected if there had been various cutoffs for admission. If there

TABLE 3
Predicted Total Freshman and Subject GPA at Different Total SAT Levels Using Predictions Equations Based on Total Cohort and on Women Separately Freshmen Entering Rutgers College in 1985

TOTAL SAT	PREDICTED FRESHMAN CUM			PREDICTED HUMANITIES GPA*			PREDICTED SOCIAL SCIENCE GPA*			PREDICTED MATH/SCIENCE GPA*		
	Total	Women	Diff	Total	Women	Diff	Total	Women	Diff	Total	Women	Diff
700	1.95	1.96	.01	2.26	2.28	.02	1.88	1.77	-.11	1.40	1.44	.04
800	2.13	2.15	.02	2.41	2.46	.05	2.08	2.02	-.06	1.62	1.67	.05
900	2.30	2.35	.05	2.56	2.64	.08	2.29	2.27	-.02	1.84	1.90	.06
1000	2.47	2.54	.07	2.72	2.82	.10	2.49	2.52	.03	2.07	2.13	.06
1100	2.64	2.74	.10	2.87	3.01	.14	2.70	2.77	.07	2.29	2.36	.07
1200	2.81	2.94	.13	3.02	3.19	.17	2.91	3.02	.11	2.51	2.59	.08
1300	2.98	3.13	.15	3.17	3.37	.20	3.11	3.27	.16	2.74	2.82	.08
1400	3.15	3.33	.18	3.32	3.55	.23	3.32	3.52	.20	2.96	3.05	.09
1500	3.32	3.52	.20	3.47	3.73	.26	3.52	3.78	.26	3.18	3.29	.11
1600	3.49	3.72	.23	3.63	3.92	.29	3.73	4.03	.30	3.41	3.52	.11

*Freshman year courses

TABLE 5
Total SAT Needed to Reach Given PGPA, and Percent in Given Range
Rutgers College Freshmen

Total SAT needed to reach PGPA of:	1985 TOTAL COHORT	WOMEN ONLY
2.00	730	720
2.25	870	850
2.50	1020	980
2.75	1170	1110
3.00	1310	1230
3.25	1460	1360
3.50	1610	1490

Number & percent of 1986 female Rutgers College Freshmen who would be disadvantaged at given PGPA:

SAT scores	N	% of total 1986 RC women
720	3	0.3%
850,860	19	1.9%
980-1010	85	8.2%
1110-1160	164	15.7%
1230-1300	93	8.9%
1360-1450	21	2.0%
1490+	1	0.1%

had been a cutoff of 2.5 on the PGPA, for example, 85 women would have been rejected if their PGPA had been calculated from an equation based on men and women combined, but would have been accepted if different equations for men and women had been used. If the cutoff were raised to 2.75, more than 15% of the 1986 Rutgers College female freshmen would have been affected.

DISCUSSION

At Rutgers University the SATs are used as one of several variables in an admissions process that is both quantitative and qualitative. The first step in this process involves calculating an Admissions Index based on the SATs and high school Rank.

As the above analysis has shown, for most of the students in the range of SATs where admissions decisions may not be obvious, the difference between actual and predicted GPA is small (the regression lines for the total group and for women alone are very close together in the middle part of the SAT range). Nevertheless, there are real people, from all levels of ability, affected by any policy decision.

Fortunately, Rutgers University does not use a cutoff score, does not rely solely on the SAT, and does not even make a PGPA the only criterion for admission. Because the University does include high school Rank in its calculations and does look extensively at non-academic credentials, women are not particularly disadvantaged when it comes to admissions[3]. In addition, the use of separate prediction equations for men and women, while seeming to alleviate the problem of underprediction for women, would have other consequences: the current combined equations overpredict for men, so that the use of a separate equation for men might result in the rejection of some men who are currently accepted. Given limited enrollment capacity, admissions is a zero-sum game: one student's gain is another's loss.

There is one area where the consequences of placing heavy weight on the SAT have yet to be fully understood: Rutgers's most prestigious scholarship program has traditionally relied fairly heavily on the SAT, with the result that in the past, fewer women than men appeared to be eligible for the awards, despite the fact that on the average, women earn higher college GPAs than men. The first criterion for eligibility is that the student be the "top" student in his or her high school, so that when it comes time to decide on scholarship awards, there is no variability in Rank to balance SAT scores. The fact that girls earn better grades in high school results in a predominance of women in the pool of eligible recipients, but can no longer help them in the final ranking.

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[3] In 1987, 38.7% of the women who applied to Rutgers College were admitted, compared to 37.0% of the men.

CONCLUSION

The solid evidence that female Rutgers freshmen earn higher grades than male freshmen, and that the current equations for predicting freshman performance underpredict for women, is not lost on those responsible for admissions policy at Rutgers University. While there seemed valid reasons years ago not to use separate equations for men and women, the advisability of continuing this policy (as well as the possibility of using achievement test scores instead of or in addition to the SATs) is just one of the issues under consideration by a Task Force convened to examine the entire area of admissions at Rutgers University. The committee charged with awarding the no-need scholarships has already modified its procedures to reduce the weight given to SAT in the ranking of eligible students. Additional research underway at the University considers whether some other criteria altogether (for example, probability of graduation) should guide admissions decisions.

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ADMISSIONS STANDARDS AND THE UNDER-PREPARED STUDENT IN AN URBAN CONTEXT - HOW INSTITUTIONAL RESEARCH IS HELPING TO FRAME THE DEBATE

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THE INITIAL POLICY CONTEXT

THE INSTITUTION:

The University of Massachusetts in Boston is an urban university with an enrollment of 11,000 undergraduates and 2,000 graduate students. As the only baccalaureate public institution in Boston, its mission is to provide access to University-level education for the diverse population of the region. Thus, its undergraduate enrollment is significantly non-traditional: almost two-thirds are transfer students, 18% are minority, the median age is 24. Sixty-four percent of freshman applicants qualify for admission, as do 85% of transfer applicants. As with most urban institutions, the retention rate is an issue of concern on campus, and some faculty question the appropriateness of the academic skill level of some of our entering students.

THE CONTRIBUTION OF INSTITUTIONAL RESEARCH:

In 1987 the Office of Institutional Research and Planning (OIRP) completed a longitudinal study of undergraduate retention. The major finding was that in our urban commuter university, the strongest predictor of retention was GPA at our institution. That is, those that did well stayed, on the average, and those that did not left. A second unsurprising but nevertheless sobering result was the size of our first year attrition - 40%. The results of this study were presented at NEAIR in 1987 and are contained in the Proceedings (1).

The first reaction to the report from a segment of our community was "let's raise admission standards". But we had done enough exploratory data analysis to suspect that this was not the answer to our retention problem. We needed to shape the institutional debate to ensure that we did not jump to the wrong strategic conclusion. From a research perspective, the question deserving our attention was the relationship between admissions characteristics and subsequent performance at UMB. At the same time, our College of Arts and Sciences (CAS), which provides a significant amount of basic preparation, was anxious to know the extent to which this instruction was successful. OIRP met with CAS and designed a research project to address both of our concerns.

THE STUDY

1. INTRODUCTION

Under extant admissions policies, the University of Massachusetts at Boston (UM/B) admits into the College of Arts and Sciences students with a wide range of academic abilities. In order to evaluate the academic strengths and weaknesses of entering students, CAS requires all new students, including transfers, to take placement examinations in English and mathematics. On the basis of these examinations students either move into the CAS core curriculum or are required to take one, or more, pre-college English or mathematics courses.

This study investigates whether the students who are evaluated as "under-prepared" on the basis of enrollment in pre-college courses subsequently do as well at UM/B as the other CAS students. (Ideally we would like to know if the effort to provide extra academic assistance to these students is successful. However, in order to have a valid test of "success" we would have to match the under-prepared students who go through preparatory coursework with under-prepared students who do not go through such coursework. This is not possible, because there are few students who are at-risk by objective standards and who do not take pre-college courses. Therefore, we cannot evaluate the success of the pre-college coursework as such, but we can assess the chances of success of CAS students with different levels of initial academic preparation.)

II. RESEARCH DESIGN

We measure student preparedness by performance on our required English and mathematics placement exams.

We studied all new students, both first-time freshmen and transfers, entering CAS in Fall, 1984 (N=1507) and Fall, 1985, (N=1520). We analyzed the two cohorts separately, and, since we found that the two cohorts have the same patterns, we averaged the results to obtain the figures we present.

For the two years, 53.3% of all first-time freshmen (N=1437) were "under-prepared" in that they took at least one pre-college course, compared to 25.5% of all transfer students (N=1590). Combining first-time freshmen and transfer students, 38.1% of all CAS students took some kind of preparatory coursework. Under-preparation in mathematics, however, is much more common than under-preparation in English or ESL. Many more students need mathematics assistance (29%) than need English assistance (14%) or ESL coursework (8%). In the remainder of this report we compare prepared students with students under-prepared in mathematics or English. Because the number of students who take ESL courses is too small to be reliably analyzed by itself we do not present separate information on these students, but we do include them whenever we talk about under-prepared students in aggregate.

We measure success at UM/B by retention and cumulative GPA. (See (2) for baseline information on retention at the University and CAS.)

We first present our research findings comparing the academic careers of under-prepared and prepared CAS students. We then move one step back and analyze certain admission criteria and their relation to placement in pre-college courses. We, thus, have two different predictors of academic success: performance on required placement examinations, and prior performance as measured by admission criteria.

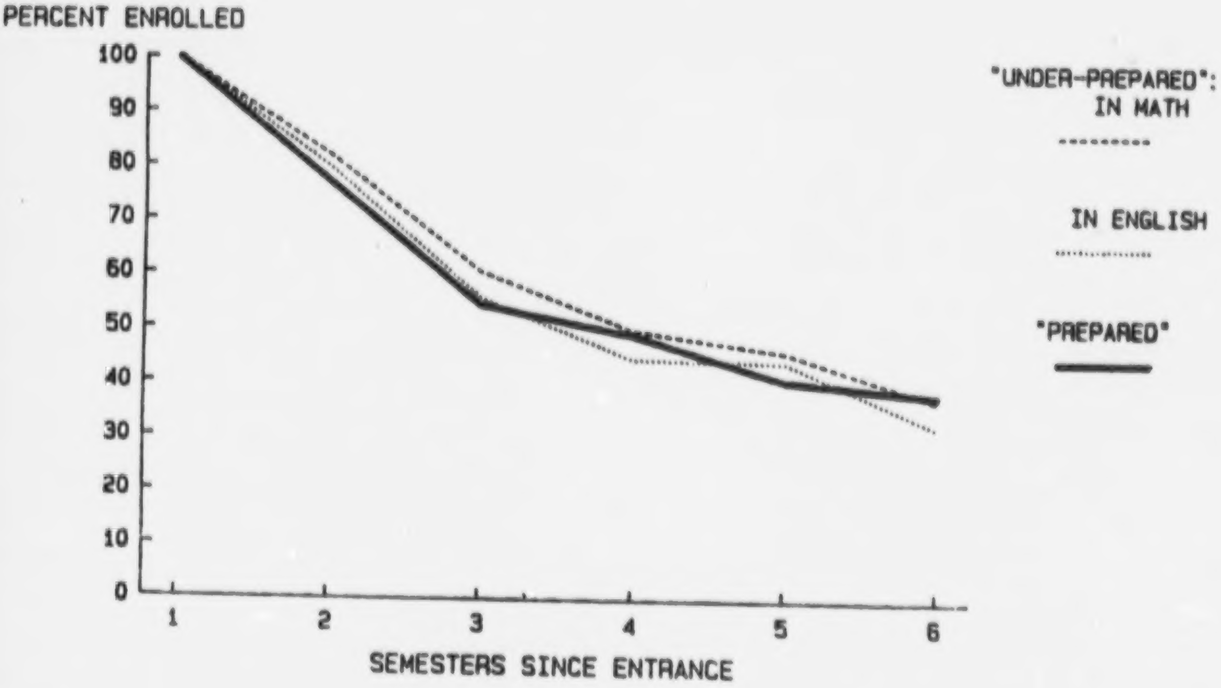
III. ACADEMIC CAREERS OF UNDER-PREPARED STUDENTS

Retention:

"Under-prepared" students have the same retention rate as "prepared" students. Figures 1 and 2 show that for both native freshmen and transfer students there is no difference in retention between students who take pre-college courses and other CAS students.

Figure 1

CAS RETENTION - FRESHMEN
"PREPARED" VS "UNDER-PREPARED" STUDENTS
EXCLUDING DSP STUDENTS



- Among freshmen, after three semesters the retention rate for prepared students is 54.4%, compared to 55.6% for students under-prepared in English and 60.4% for students under-prepared in mathematics.

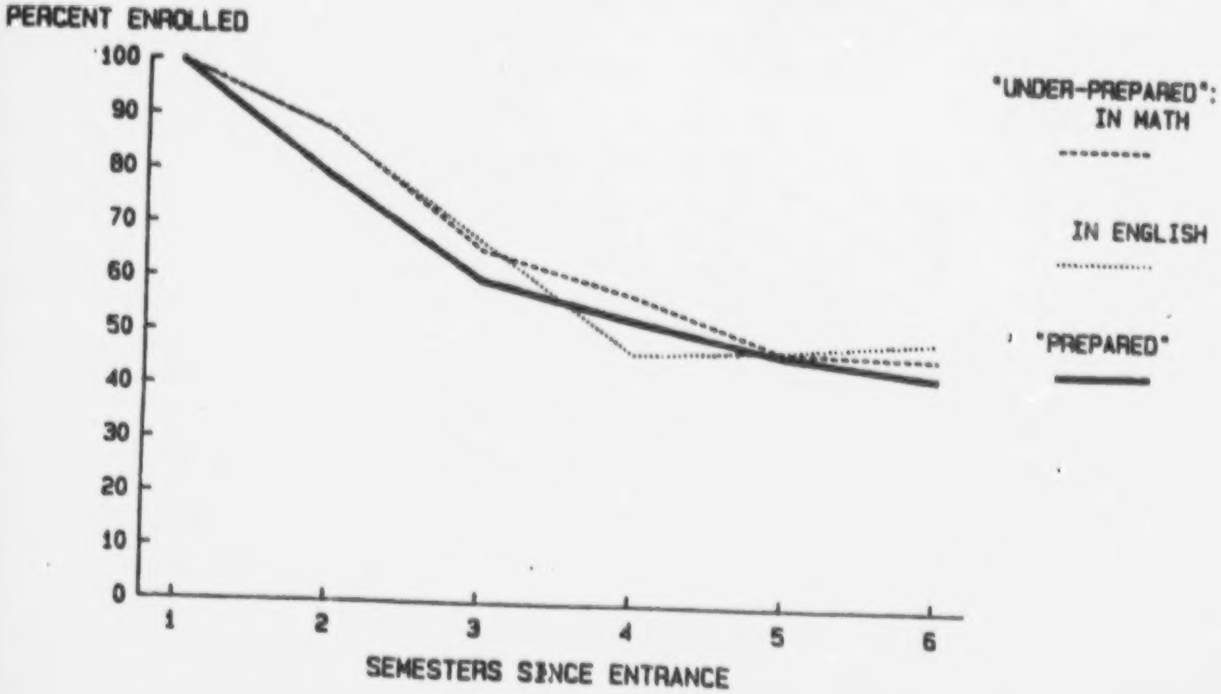
- After six semesters, prepared students have a 38.2% retention rate, compared to 32.2% for students under-prepared in English and 37.1% for students under-prepared in mathematics.

- At each semester marker, there is no significant difference in the retention of prepared vs. under-prepared students.

- Among transfer students, the same pattern holds with under-prepared students having the same or better retention rates as prepared students. For example, after three semesters the retention rate for prepared transfer students is 59.9%, compared to 65.4% for transfers under-prepared in mathematics and 67.0% for transfers under-prepared in English.

Figure 2

CAS RETENTION - TRANSFERS
"PREPARED" VS "UNDER-PREPARED" STUDENTS



We investigated whether the retention parity between under-prepared and prepared students was the same for white and minority students. We found no differences by race in the patterns.

- The third semester retention rate for under-prepared white first-time freshmen is 63.4% compared to 63.5% for under-prepared minority first-time freshmen. Similar findings at other points leads to the conclusion that the relationship between under-prepared and prepared students is the same for white and minority students.

Grade Point Average:

Students under-prepared in mathematics have GPAs as good as prepared students, but students under-prepared in English tend to have lower GPAs.

- Among freshmen, the third semester GPA for students under-prepared in English is 2.22 compared to 2.46 for students under-prepared in mathematics and 2.53 for prepared students. The sixth semester GPAs show an even wider difference, 2.32 compared to 2.71 and 2.73 respectively.
- Among transfer students, the third semester GPA for students under-prepared in English is 2.02, compared to 2.44 for students under-prepared in mathematics and 2.70 for prepared students. The sixth semester GPAs for transfers show a reduced difference, 2.61 compared to 2.81 and 2.92, respectively.

What these patterns suggest is that the student who is under-prepared in mathematics is not very different from the rest of the CAS student population. Deficiency in mathematics, as measured by our placement exam, is something that affects a sizeable number of our students, but these students are given the assistance they need through pre-college courses and go on to do as well as other CAS students. On the other hand, however, deficiency in English skills, while affecting a much smaller number of students, may continue to hamper the student's academic accomplishment even after taking pre-college courses. It may be that a student who has trouble in mathematics can successfully plan and complete a major that requires little mathematical ability, whereas a student in need of English assistance will have to confront that difficulty in any further course of study.

IV. ACADEMIC CAREERS AND ADMISSION CRITERIA

We have shown that students who enter CAS under-prepared in mathematics or English have the same retention rates, but somewhat different GPAs (for English only) than students who enter CAS prepared. Although we cannot say that the under-prepared students do as well as they do because of the special courses they are required to take, we assume that if this special coursework were to be eliminated these students would not do as well as they do. Is there any way to predict what percentage of the students who enter CAS will be required to take pre-college courses? The standardized measures that are used as part of the admissions process for first-time freshmen are SAT scores and high school rank in class. The measures used for transfer students include GPA at the prior institution attended. These admissions criteria may be regarded as an alternative measure of "under-prepared" status. How do the students who are low on any of these measures compare to other CAS students in GPA or retention? We first look at how the admissions criteria correlate with the performance on placement examinations, and then analyze how the admissions criteria relate to academic success.

Freshman admissions criteria and student success:

SAT Scores, Rank in Class and Pre-college Coursework

Students who take pre-college coursework have lower SAT scores than other CAS students, and lower rank in their high school graduating class.

- Among first-time freshmen, prepared students have a 964 mean combined SAT score compared to under-prepared students' 839 mean combined SAT score.
- Among those freshmen in the top-fifth (first quintile) of their high school graduating classes, 16% need to take pre-college mathematics, compared to 29% of students in the second quintile and 38% of students in the third quintile. This relationship between high school rank and the need for pre-college mathematics courses is clear and direct. The relationship is not strong for pre-college English coursework. Among the top quintile of high

school graduates 5% need to take pre-college English courses, compared to 14% of students in the second quintile and 8% in the third quintile. Again, the relatively small number of students who need to take pre-college English courses makes this relationship difficult to interpret.

What is clear is that on the basis of SAT scores and high school rank in class there is a clear relationship between prior academic performance and the performance on the required placement tests in mathematics and English. There is consistency in measurement between these two independent assessments of student preparedness.

SAT Scores, Rank in Class and Student Success

SAT scores have a positive relationship with GPA, but no direct relationship with retention. In general, students who are retained and have acceptable GPAs have higher SAT scores than their counterparts, but the strength of the relationship is low making it inappropriate to use SAT scores as a predictor of student success at CAS.

- Students with combined SAT scores between 700 and 849 have a fifth-semester retention rate of 48.4%, compared to 50.2% for those with scores 850 - 999, and 57.0% for those with scores 1000 and above. There is a very small group of students who have combined SAT scores below 700 and who were not in the pre-enrollment developmentsl studies summer program, about 20 students a year. It is interesting that this small group has a fifth semester retention rate of 70.2%, the highest of any SAT category. Obviously, for certain types of students SAT scores have no relevance for predicting success at UM/B and the alternative criteria used for admission are appropriate.
- Using these same SAT categories, in the fifth semester the top scoring SAT group has 16.8% with GPAs below 2.00, compared to the other three groups having between 20.2% and 21.4% below 2.00. We see, therefore, that a high SAT score is related to less academic difficulty, but below that top group there is no relationship between SAT score and subsequent GPA.
- Rank in high school class has no significant relationship with GPA and retention, but the general direction of the association is as hypothesized with the top quintile by high school rank having higher GPAs and higher retention rates than other students.

Transfer admissions criteria and academic success:

Prior GPA and Pre-college Coursework

For transfer students, GPA at a previous institution is related, but not at a statistically significant level with placement in pre-college courses.

- 17.9% of transfers with GPAs above 3.00 take pre-college mathematics courses, compared to 24.3% of transfers with GPAs between 2.5 and 2.99, and 24.6% of transfers with GPAs below 2.50.
- 2.3% of the high GPA transfers take pre-college English courses, 4.6% of the medium GPA transfers, and 6.9% of the low GPA transfers.

Prior GPA and Student Success

For transfer students, students with high GPAs at their previous institution have higher UM/B GPAs and retention rates than students with medium or low GPAs at their previous institutions.

- 60.5% of transfer students with high GPAs are retained in the fifth UM/B semester, compared to 51.9% of medium GPA transfers, and 48.3% of low GPA transfers.
- By the fifth semester, the three GPA categories of transfers have UM/B GPAs of 3.10, 2.77 and 2.68, respectively.
- Although both retention and GPA are positively related to previous GPA, both of the relationships are relatively weak and retention, in particular, cannot be confidently predicted.

In summary, there is a consistency between performance on the CAS placement examinations and the freshman admissions' criteria of SAT scores and rank in high school class. For freshmen, both SAT scores and high school rank in class are related to performance on placement examinations, but, like the placement examination itself, after remedial coursework neither measure is significantly related to subsequent UM/B GPA or retention. Among transfer students, prior GPA is not related to placement into pre-college courses, although prior GPA is somewhat related to subsequent UM/B GPA and retention.

With regard to admissions, it appears that the standardized measures currently available are only weak predictors of academic success at UMB.

THE NEW POLICY CONTEXT

The study contributed to framing the strategic choices facing our intitution. It showed that there are no simple answers - a result that does not always bring joy to the hearts of decision-makers. But we can draw some conclusions:

o We learned that adjustments in freshman admissions standards are unlikely to result in a student body that demonstrates improved academic success. It is probably better to focus on ensuring that the pool of applicants continues to be as diverse as we believe it should be. (Large changes probably would result in improved retention but would also undermine the mission of UM/B to provide educational opportunity for the non-traditional student.)

o We also learned that there is little difference in the success of "under-prepared" and "prepared" students in CAS. The student performance on required mathematics and English examinations which places a student into pre-college courses is related to previous academic preformance (SAT scores and rank in high school for frehman, GPA at previous institution for transfer students), but students who take these courses have similiar UM/B retention rates and only slightly lower GPAs than other students. It seems that our under-prepared students need help, get it, and then go into the broader course curriculum where they are measured by subsequent academic performance and succeed as well as other CAS students. This result is similiar to the evaluation of remediation programs in New Jersey public colleges and universities (3). The only significant correlate of retention at UM/B is UM/B GPA which is not related to under-prepared status.

o We are still faced with a significant retention problem. We do not want to resolve it by changing the very nature of our student body, so we are choosing to focus even more assertively on the first year experience of our students.

o And finally, our work has not provided an easy answer to a recent phenomenon, more qualified students than we have space for. Perhaps the inter-institutional competition caused by the demographics of the next seven years will result in a natural decrease in this demand, or a more favorable fiscal enviroment may again allow for expansion. But we do know now that the "obvious" answer (raise admission standards) is not necessarily the best one. We cannot tell with any degree of certainty who will flourish and who will not so we continue to strive to provide as many candidates as possible the opportunity to try, and the support that will increase the probability of success.

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(1) Langer, Peter "Student Retention at a Non-Residential University," Proceedings. NEAIR. 14th Annual Conference, 1987,pp 69-84.

(2) Student Retention at UMass/Boston, 1981-1987. Office of Institutional Research and Planning, Boston, Mass, September,1987.

(3) Effectiveness of Remedial Programs in New Jersey PubLic Colleges and Universities, Fall 1983-Spring 1985, New Jersey Basic Skills Council, Departmant of Higher Education, November, 1986.

A STRATEGIC PLANNING MODEL FOR ADMISSIONS

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Over the course of the past several years the term "strategic planning" has become part of the zeitgeist. The term has been applied to several activities, some new, some simply new descriptions of old ways. A few descriptions of the process, however, offer important insights which are as useful today as when originally offered. From Keller's (1983) perspective, "Strategic planning looks outward and is focused on keeping the institution in step with the changing environment" (p. 145). Kotler and Fox (1985) defined strategic planning as "...the process of developing and maintaining a strategic fit between the institution's goals and capabilities and its changing marketing opportunities" (p. 73). The scope was thus broadened to include both internal and external considerations. By strategic planning for admissions, I mean the identification of admissions activities which are necessary for responding to changing needs and changing environments. Included is the requirement for frames of reference which define both internal and external environments, needs, and opportunities.

In press, The Admissions Strategist, The College Board, 1988.

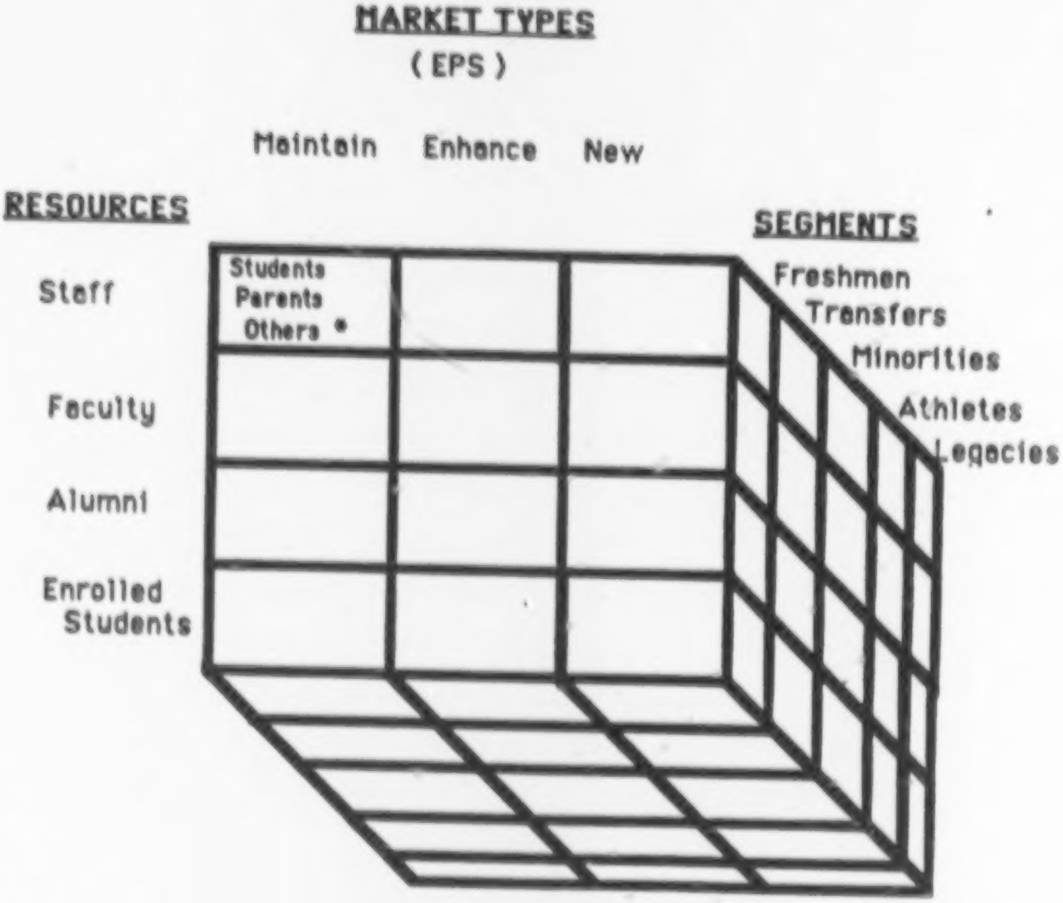
The problem at hand is how to give structure to the strategic planning function. The creation of a planning paradigm is useful for it breaks a relatively complex activity into several smaller, more easily understood, activities. This model serves to help get one's arms around the problem. It represents a starting point. It should change over time as expertise and experience with modeling grow. Use of this model is intended to create a portfolio of differentiated targeted marketing opportunities. An underlying tenent of targeted activities holds that certain activities are optimally effective for specific groups under particular conditions. Generalized, nondifferentiated activities, while perhaps more convenient and less costly, may be less effective in meeting objectives. The model can be used not only to identify new activities but also to create a context within which to view and evaluate existing activities. The objective is to view recruiting as a complex set of activities which vary along several dimensions. These dimensions are shown in Figure 1.

Model Dimensions and Categories

Resources is the first dimension. It is comprised of groups which can participate in the recruitment function. Admissions staff, enrolled students, faculty and alumni each would be included. This category might also include materials such as institutional publications, videos and other

Figure 1

STRATEGIC PLANNING MODEL


MARKET TYPES
(EPS)
Maintain
Enhance
New
RESOURCES
Staff
Faculty
Alumni
Enrolled Students
SEGMENTS
Freshmen
Transfers
Minorities
Athletes
Legacies
Students
Parents
Others *

* other influencers eg, counselors, coaches, teachers, etc.

recruitment materials. In favor of simplicity, however, the discussion will be limited to people.

It is important not to view each Resource subgroup as interchangeable or exchangeable for any other subgroup. For this reason, we should not consider using each Resource group for identical purposes. Instead, we should remember that different audiences (prospective students, parents, high school counselors, etc.) each have a preference for specific sources of particular types of information (Litten, 1986). For example, prospects will accept general information regarding requirements and deadlines from admissions staff. However, prospects prefer enrolled students as their source for descriptions of "what life is really like" at any given school. As each year's prospects become better informed consumers of higher education services, they become more wary of what they perceive to be "party line" information disseminated by admissions officers. Understanding this potent strength of enrolled students should cause us to think about how we can take advantage of this particular Resource subgroup. Many institutions ask enrolled students to host visiting prospective students. But, how many give hosts an explanation of how critical they are as a source of information? Such an explanation would establish the objective behind the hosting program and could promote dissemination of information that strongly influences prospects.

Another potent Resource subgroup is volunteer alumni. All too frequently, however, alumni are enlisted to serve the roll of admissions adjuncts with the objective of prescreening applicants. Consider how much more effective alumni could be in converting prospects into applicants if thought was given to unique information alumni could offer to prospects. Specifically, alumni are in the exclusive position of having experienced the benefits obtained from their alma matter. Alumni should focus on outcomes which include opportunities for graduate education, professional employment and preparation to meet the responsibilities of society. To relegate alumni to the prescreening recruitment role is to miss a great opportunity.

Faculty also have a unique contribution to make to recruitment. Their role, however, should not be limited to helping prospects identify majors and concentrations. Instead, they should focus on what it is like to be a major in a given area, what one learns and how is it learned. Again, outcomes should be stressed and faculty can be effective in pointing out examples of employment and life skill opportunities associated with particular academic concentration choices.

The college selection process is a trying experience for adolescents. Litten (1986) recognized this and introduced the notion of universal costs (both financial and psychological) and benefits experienced by students during the application process. An awareness of these cogent issues would help an institution to craft messages of recognizable importance to applicants and deliver them through cost-effective means. In addition, such communications provide a service because prospective students come to realize they are not alone in their concern over these issues.

Market Types. This second dimension is delineated by the College Board's Enrollment Planning Service market definitions. These definitions divide markets into subgroups on the basis of how well an institution is known within geographic areas. Markets requiring maintenance are those in which an institution is already well known. Such existing markets are important because they represent geographic areas in which the institution already captures an important share of the available SAT score reporters' interest. Markets which must be enhanced are those in which there is a pool of students similar to students traditionally attracted by the institution. A larger market share could be attracted if enhancements to the recruitment strategy were undertaken. Finally, new markets are those in which a particular institution receives virtually no share of the available pool in spite of the presence of students who are similar to those traditionally attracted.

Recruitment activity requirements are qualitatively different for each type of market. In a new market, much of the work can be accomplished by the admissions staff. Basic information must be made available and contacts must be established. Traditional activities such as high school visits, college nights, college fairs and contact with high school counselors would each be executed by the admissions professionals. At the same time, alumni groups would be established and trained by the admissions staff. Over time, the new market would evolve into a market to be enhanced or maintained. At that point alumni might be introduced to high school counselors and the alumni could serve as the local institutional representative. The benefits of this arrangement include increased person hours available to any given high school and establishment of local contacts for both high schools and prospective students.

In established markets, those to be maintained, enrolled students might take on a greater role. With the assistance of admissions staff and local alumni, students might visit their former high schools during semester breaks and talk with prospective students about college life.

Student Segments is the third dimension. It includes prospective student groups which are determined to be of particular importance to the institution. Many institutions recognize the necessity of strengthening representation from such groups as a means toward improving student diversity and achieving other institutional objectives. This dimension might include minorities, freshmen, transfers, athletes, legacies, etc. Different groups can be recruited more effectively when an institution is able to craft an appeal specifically addressing issues of interest to particular student segments. It is not uncommon for institutions to have special communications targeted for minority prospects. Fewer institutions have adopted similar strategies targeted to other important student segments.

Recipient Group. This fourth dimension identifies audiences which might be targeted for specific activities or communications. It includes, at least, prospective students, their parents and high school counselors. It might also include independent college counselor agents and junior college officers responsible for placement of two year degree recipients. Each group requires a message which is targeted to their needs. Resources are under-used when the same, undifferentiated message goes to every group. Several methods are available for discovering the desired information content preference of each group. These methods vary from the use of formal questionnaires, to focus groups, to individual conversations with members of the group.

Application Chronology. At this point the model becomes too complex for representation in a two-dimensional space. However, there is an additional dimension which must be noted. The points of the Application Chronology often dictate the form or content of any given contact. This is understood by most institutions and is demonstrated by the difference between inquiry activities and materials versus activities intended to influence matriculation decisions.

The Model as Hueristic

Cells are created as a result of the intersection of dimensional categories. Each cell, theoretically, represents a unique marketing opportunity. Each distinct opportunity may require a distinct set of activities. For example, imagine a cell which represents the following intersection:

Resouce = faculty,

Market = enhance,

Student Segment = female freshmen interested in engineering,

Recipient Group = student, and,

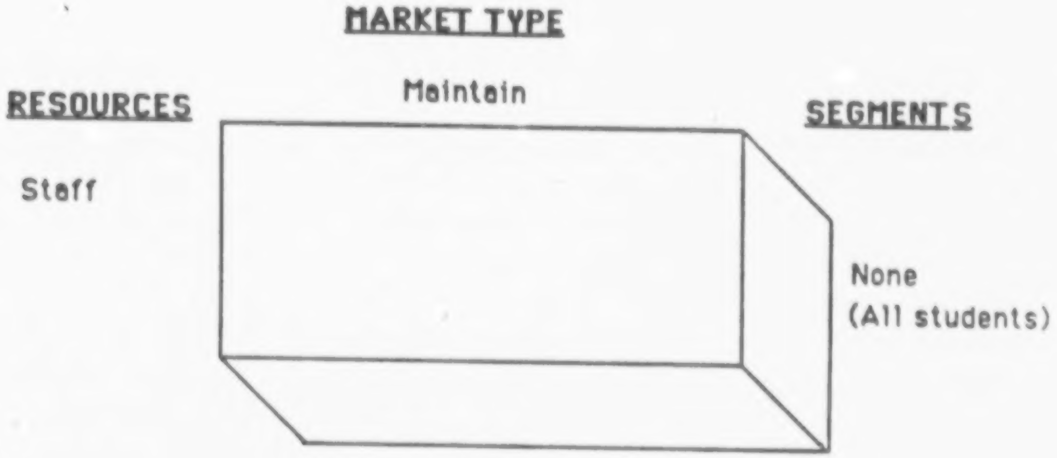
Chronology = admitted applicant.

One possibility, appropriate for this cell, might be a faculty letter to the admitted student welcoming her to the school/department, explaining research opportunities available to undergraduate women engineers and offering an invitation to become a member of the department's association for women in engineering.

It is important to note the overall goal is not to completely fill every cell in the matrix with an activity. The goals are, first, to identify current effective activities and, secondly, to identify new opportunities. The selection of additional activities must be done with an eye toward internal environmental factors such as budget, staffing and volunteer resources. The selection of activities should also be made with an awareness of what the competition is doing to attract the same applicants.

The question of marketing mix is central to strategic planning. Planning for the most efficient use of limited funds and resources first requires identifying the current mix and then deciding on a desired mix. The model under discussion serves both objectives. First, the model facilitates identification of current activities via cell by cell analysis. Secondly, this portfolio approach identifies opportunities for new activities. The desired mix varies by institution. The mix depends upon the institution's mission, goals and current status vis a vis each of its constituencies. In the simplest case, probably not reflected at any viable institution (Figure 2), there is only one category within each dimension. In this overly simplistic case, the admissions staff carries all recruiting responsibilities and activities are not differentiated with regard to markets, nor student segments, nor recipients, nor chronology. All admissions operations are more complex than that which is shown in Figure 2, but are less differentiated than what is represented in Figure 1. Again, the model serves as heuristic and helps one decide on the appropriate degree of complexity required.

Figure 2
UNDIFFERENTIATED MODEL



The Planning Environment

Appropriate levels of complexity depend on several issues including commitment to strategic marketing, budget restraints, research support and staff experience. It is unreasonable to expect an emerging plan to spring full blown and represent the entire range of possible complexities. A model which fills every cell could only be used as a strategic response in an environment with infinite resources. It should, therefore, be viewed as an unobtainable ideal. The extent to which it can be approximated, however, depends upon creativity from many sources. The creative process starts with evaluation of current activities. Program evaluation is necessary to determine which activities meet their respective objectives. It is not sufficient to know which activities are not being successful. It is also desirable to identify what can be done to alter activities which do not meet objectives. Program evaluation should also be applied to successful activities to estimate the transferability of successful elements to other applications.

Research also has a role in planning a portfolio of activities (Litten, 1984). Several recent writings explain both how to design such research and how to apply it to the recruitment function (Litten, Sullivan & Brodigan, 1983, Lay & Endo, 1987). One purpose of research is to collect information regarding recipients' perceptions of services, materials and processes. Methodologies include formal, traditional survey research design and less formal approaches such as focus groups. All existing in-house research which focuses on existing activities, should be reviewed. New research should be executed, as appropriate, for each active cell in the model. The utility of such information is the prime criterion for determining whether or not to conduct the research. Research must lead to interpretations, strategies and applications if it is to be of value. Complexity is not necessarily the hallmark of valuable research. Similarly, research which is overly simplistic may not be useful. A balance must be struck, ever with an eye toward helping to plan and evaluate recruitment activities.

The role of the admissions staff will change under an approximation of this model. It is their role, by virtue of their responsibilities, to identify both existing and desired activities across each dimension. This accomplishment requires an awareness of research results, interpretations, implications and strategies. Sources include in-house research, consultants' efforts and the Enrollment Planning Service data. Success also requires divergent rather than convergent thinking. Most often, we revert to convergent thinking because it has been successful for us in the past. This is true particularly when the objective has been to identify the one correct answer. Successful planning requires divergent thinking to identify several alternatives, each of which may be valuable. Such contributions from staff can only be made when the staff understands they are participating in the discovery of a plan to chart new ways of doing business. Staff activities also evolve from that of simply being implementor to one that includes training and coordinating other Resource subgroups such as faculty, alumni and current students. Obviously, the execution of these roles is equally as important as the planning phase.

A vehicle is required to facilitate the strategic planning process. In the long run, a "top down" planning model is limited by the volume of fresh ideas available. In addition, it fails the critical task of enabling staff to feel psychological ownership of the activities. Planning must become the responsibility of persons from several administrative levels. One central core committee should be formed, however, for the purpose of keeping the planning process in focus and in motion. These tasks can be accomplished via several approaches. Some institutions have established Enrollment Committees with broad-based representation. Others have chosen to organize administratively so all offices which have an impact on enrollments report to one senior level administrator. Alternatives vary according to several factors including perceptions of current enrollment success and availablity of enrollment management leadership.

An ancillary benefit of adopting a model is the creation of insights which suggest distribution of budgeted recruitment resources. Estimates of resource requirements within market types are more easily developed via cell by cell analysis. Similarly, the administrator in charge of the recruitment budget can more easily understand where to target funds so as to accomplish the most important goals among several which are competing for attention.

Conclusion

Planning is a difficult task. Planning for an efficient use of limited resources to accomplish a complex task is even more difficult. This task can become more easily managed when a planning model is used. It facilitates an understanding of the total task at hand by each of those who are responsible for some component of the process. Finally, a word about planning and plans per se. The least effective plans are those "cast in concrete" and relegated to the bookshelf. The result, in such instances, is often a rigid plan incapable of meeting changing environmental needs. It is often accompanied by a desire of former participants to avoid subsequent planning exercises. The processes which appear to work best are those which recognize planning as an ongoing activity, free to evolve in response to changes in both internal and external environments. Successful planning not only makes efficient use of limited resources, but also engages staff in a manner which contributes to their feeling of empowerment. The result is an institution which, although formerly reactive to recruitment demands, becomes proactive. Such a process is difficult and often complex, but always rewarding in its success.

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FACULTY SALARY EQUITY: INTEGRATING POLICY AND PRACTICE THROUGH DECISION SUPPORT

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Introduction

Despite the recent emphasis in higher education on strategic data-based decision making, the issue of faculty salary equity remains one to which institutions continue to react on an ad hoc basis. The issue is indeed complex and difficult to contain. Judicial interpretations of federal and state laws and regulations are by nature situation specific and even these have varied historically. Such variations and situation-specific interpretations yield little guidance for more general applications. Further, the very nature of faculty salary decisions, that is, dollar translations of administrative judgments regarding academic quality and merit, compound the problem. But the costs of an ad hoc approach are very high. The monetary costs of repeated litigation and related actions are obvious. Less obvious, but perhaps even more costly to an institution is the violation--or apparent violation--of the contemporary social ideal of equity; an ideal clearly espoused by most higher education institutions.

The issue of faculty salary equity can be approached strategically. "An institution can never resolve every perceived inequity. But it can review and attempt to understand the full range of real or potential inequities in a structured way and then assign priorities and respond appropriately, as feasible" (Cloud, 1980). By integrating its stated policy on faculty salary equity into its regular decision-making process, an institution can move from rhetoric to action. The development of an aggressive, visible, fully integrated decision-support link between policy and practice is key to this transition. The purposes of this paper are (1) to present the case for a systematic, data-based review of faculty salaries in terms of equity as part of the regular budget/salary decision-making process, and, (2) to describe a practical procedure available to institutional researchers that supports the development of this link and helps to ensure its effectiveness and continuance.

The Case for Systematic Equity Review

Fundamental to an informed decision regarding the institutional approach to faculty salary equity is a basic understanding of the issue and its many facets. The following is a brief review of the literature as it pertains to the conceptual, historical and legal aspects of the issue within the context of higher education.

The concept of faculty salary equity. While the dictionary definition of equity seems rather clear and unarguable, agreement on what constitutes equity is difficult, if not impossible, to achieve. This statement is particularly true when examining faculty salaries. Hendrickson and Lee,(1983) suggest that the deceptive simplicity of "equal pay for equal work" breaks down when one considers the nature of colleges and universities and the wide variation among individual talents, disciplinary prestige, and scholarly productivity. More recently, Kaplowitz (1986) emphasizes the complexity of the issue as he summarizes research findings as follows: "Three issues that affect faculty salaries intersect and overlap in a tangled skein: the legal issue of comparable worth, the impact of the non-academic marketplace and concepts of fairness on campus."

The complexity of operationalizing the concept for higher education leads to and is compounded by the salary decision process. Hendrickson and Lee (1983) contend that initial salaries and salary increases are "often based upon subjective evaluations of performance or upon abstract notions of what a person trained in a certain discipline is 'worth' in the marketplace." These "wide variations" among talents and disciplines, while true and real, provide a fertile basis for potential disagreement and individual interpretation. One might say that it is the perception of the issue, not its reality, that defines what will be acceptable as a response. To reduce potential disagreement and varying interpretations, the procedures and measures used to make salary determinations must be established, written and applied consistently. ". . . a lack of procedural uniformity and inattention to differential treatment of faculty institution-wide has resulted in colleges' being found liable . . ." (Hendrickson and Lee, 1983).

Point #1. While the issue of faculty salary equity is complex, the establishment of a functional definition in terms of a written, uniform procedural base for faculty salary decisions is critical to the institution's ability to clarify, disseminate, and implement its policy on equity.

Historical and legal aspects of the issue. In 1972, both Title VII of the Civil Rights Act and the Equal Pay Act of 1963 were amended to apply to higher education. These two federal statutes provide redress for salary discrimination on the basis of gender, race, religion, and ethnic background. Generally[1], under Title VII, a plaintiff must demonstrate that the job used for comparison is comparable and "establish a prima facie case that provides evidence that discrimination is a plausible explanation for the differential salary," and not due to market factors (Hendrickson and Lee, 1983).

The Equal Pay Act differs from Title VII in that its protection applies only to gender and requires that the jobs being compared be equal in each of the four areas: skill, effort, responsibilities, and working conditions. Under the Equal Pay Act, once a plaintiff establishes a prima facie case that the positions being compared require equal skills, effort, responsibilities, and working conditions, it becomes the responsibility of the employer to demonstrate that the salary differential is justified by one of four exceptions listed in the law. According to the law, a differential salary is justified if the salary is based on (a) a seniority system, (b) a merit system based on objective evaluation criteria, (c) a system that measures quality or quantity of production[2], or (d) a differential based on any factor other than sex. Historically, most cases involving alleged faculty salary inequities have focused on the final exception (Hendrickson and Lee, 1983).

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[1] The reader is referred to Hendrickson and Lee (1983) for a more detailed description of these statutes and their respective requirements.

The literature on faculty salary equity is massive and predates the application of federal statutes to higher education by several years. Similarly, a thorough analysis of litigated cases of alleged faculty salary inequity cited in the literature clearly is beyond the scope of this paper. Common threads and generalizable lessons learned, however, can be gleaned and summarized.

Probably the most pervasive thread is the need for careful documentation of salary decisions. Salary differentials are permissible but must be justified on the basis of "factors other than sex." In addition to established seniority and merit systems, examples of such factors which have successfully justified salary differentials include:

- o heading an academic program;
- o membership on governance committees;
- o merit if based on clearly articulated criteria;

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[2] Usually limited to employees paid on the basis of commission or piece-work.

- market if based on accurate and complete data on market value
- variables such as highest degree, years of experience, and type of degree.

Hendrickson and Lee (1983) summarize: "But where a college cannot document objective factors responsible for salary differences between male and female faculty, and especially where most or all of the individuals making salary decisions are male, a court may conclude that the differences reflect discrimination rather than some neutral factor (Mecklenberg v. Montana State Board of Regents, 1976)."

> **Point #2.** Careful documentation of all salary decisions is critical to an institution's ability to act strategically regarding faculty salary equity.

The other dominant thread is the need for systematic safeguards to ensure equity and guard against discrimination. The literature suggests that a standardized system for salary determinations which is uniformly applied and based on clearly articulated, widely disseminated criteria provides the institution a strong position of informed control over the issue. Conversely, the more decentralized the system, flexible the criteria, and subjective the decisions, the more vulnerable the institution is to "blind-sided"/surprise litigation. Obviously, some factors relating to faculty salary decisions (e.g., productivity, teaching quality) are difficult to measure objectively and are most appropriately administrative, subjective judgements. The caution is in the balance of objective measures and subjective judgements, and the uniformity of application of both.

> **Point #3.** The best defense for an institution is a strong offense. A well defined system for defining faculty salaries on the basis of clearly articulated criteria provides the framework for that offense.

__Use of regression analysis__. Regression analysis has been established as an acceptable means to review current salaries for indications of discrimination. Regression is said to permit a quantitative estimate of the effects of a variety of independent variables on a specific dependent variable, faculty salary. Theoretically, the independent variables entered into the equation reflect the institution's/college's/department's decision-making criteria. The variables should then be those most relevant to the salary decisions, and together the variables should measure the important faculty characteristics as defined by the institution. One cautionary note permeates the literature, and that is that the validity of a regression analysis on faculty salary equity is dependent on the nature of the independent variables in terms of equity. Discriminatory practices linked to an independent variable (e.g.. rank or promotion) will confound the results of the analysis and weaken its decision-support value.

Point #4. Regression analysis has been established as an acceptable means to review current salaries for indications of discrimination.

Methods

In order for equity to be effectively integrated as a true standard into the administrative decision-making process, chairs, deans and academic affairs administrators need decision-support information which quantifies a basis for salary decisions before decisions are made rather than after in defense of prior decisions.

In addition, salary equity information needs to be relevant, personalized, conceptually understandable, and viewed as supporting decision making rather than interfering with or determining decisions. Foremost in our minds should be the realization that equity issues are administrative, conceptual, and emotional rather than purely statistical. This approach provides a baseline or benchmark from which salary decisions can be reviewed for equity.

Procedure. The decision-support materials described below are prepared annually and forwarded to the academic deans prior to the discussions leading to the award of annual salary increases. These and other appropriate materials may be distributed by the deans to the departmental chairpersons. As discussions proceed and decisions are made at succeeding administrative levels, these materials are carefully reviewed and become a crucial element in establishing equitable salaries. At each level of discussion, salaries that fall outside predetermined limits are thoroughly reviewed and justifications or recommended corrective actions are required and recorded. At the conclusion of the annual cycle, these reports become part of the official documentation of the salary equity review process. Cumulatively, they represent the institution's effort and record to ensure salary equity among the faculty.

Salary equity decision-support materials. Prior to the annual faculty salary review period, salary prediction models for each academic college are developed centrally using multiple stepwise regression. These models are based on information pertinent to the incumbent faculty members of that unit and on academic and market factors that have traditionally been viewed as non-discriminatory determinants of faculty salary (e.g., years of professional experience, highest degree, disciplinary affiliation, full-time equivalent, administrative over-ride). If available, relevant, and objectively measured, it is appropriate to include measures of research productivity, teaching effectiveness, and contribution to public service. Unfortunately, objective measures of these factors for each and every faculty member are almost nonexistent in higher education. These resulting models are then used to predict "ideal" salaries for the incumbent faculty members and reports displaying actual salary, projected salary, and differences between actual and projected salary for each individual are generated (See Figure 1 below). You will note that the individual salary differences shown in Figure 1 are displayed in one of three columns. Personal experience has taught that the individuals reviewing these reports desire and indeed need the ability to separate the differences into "reasonable" and "unreasonable" categories. This is currently done on the basis of the standard error although any other appropriate value can be used. Experience has also taught that knowledge of individual faculty characteristics is important in the process. Not all decision-makers know each faculty member personally, and if they do they are seldom aware of such factors as years of professional experience. Indeed, there may occasionally be inaccuracies in the personnel data that need to be corrected before further examination. For these reason, information pertaining to each faculty member is shown on each and every report.

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FIGURE 1

DEPT NUMBER	IDENTIFICATION	ACTUAL SALARY	PROJECTED SALARY	DIFFERENCE, <STANDARD ERROR	ACTUAL PROJECTED >STANDARD ERROR	RAWA	AVPT	DEGR	STAT	FTE	EXP	YMUN	XTRA
163500	J.J. Doe	42175.	40218.	1957.		B	2	4	7	1.000	17	22	0
163500	J.J. Doe	60127.	57308.	2819.		A	2	4	7	1.000	19	14	0
163500	J.J. Doe	45344.	43522.	1822.		B	2	4	7	1.000	21	19	0
163500	J.J. Doe	71953.	65786.		6167.	A	2	4	7	1.000	47	23	0
163500	J.J. Doe	40394.	41922.	-1528.		B	2	4	7	1.000	17	16	0
163500	J.J. Doe	61294.	61540.	-246.		A	2	4	7	1.000	21	25	0
163500	J.J. Doe	50545.	55649.	-5104.		A	2	4	7	1.000	20	22	1
163500	J.J. Doe	47623.	43238.	4385.		B	2	4	7	1.000	21	20	0
163500	J.J. Doe	44402.	55230.		-10828.	A	2	4	7	1.000	17	17	0
163500	J.J. Doe	47053.	46019.	1034.		B	2	4	7	1.000	26	21	0
163500	J.J. Doe	67139.	58385.		8754.	A	2	4	7	1.000	24	21	0
163500	J.J. Doe	60978.	60463.	515.		A	2	4	7	1.000	26	18	1
163500	J.J. Doe	41991.	43283.	-1292.		B	2	4	7	1.000	22	22	0
163500	J.J. Doe	72235.	64844.		7391.	A	2	4	7	1.000	45	22	0
163500	J.J. Doe	54437.	56591.	-2154.		A	2	4	7	1.000	22	24	0
163500	J.J. Doe	43769.	53062.		-9293.	A	2	4	7	1.000	14	16	0
163500	J.J. Doe	35553.	42206.		-6653.	B	2	4	7	1.000	17	15	0
163500	J.J. Doe	51004.	44883.		6121.	B	2	4	7	1.000	26	25	0
163500	J.J. Doe	54872.	58804.	-3932.		A	2	4	7	1.000	27	26	0
163500	J.J. Doe	52275.	45361.		6914.	B	2	4	7	1.000	24	19	0
163500	J.J. Doe	27000.	31625.	-4625.		B	2	3	6	1.000	7	1	0
163500	J.J. Doe	65217.	62288.	2929.		A	2	4	7	1.000	35	31	0
163500	J.J. Doe	52285.	57114.	-4829.		A	2	4	7	1.000	21	19	0
163500	J.J. Doe	45589.	55798.		-10209.	A	2	4	7	1.000	17	15	0
163500	J.J. Doe	50631.	44554.		6077.	B	2	4	7	1.000	25	24	0

It should be noted that, while initially important to the decision-maker, the magnitude of the difference between the actual and projected salary should not determine the sample of faculty to receive further consideration. Indeed, differences between actual salary and projected salary that are not larger than the standard error should also be reviewed. In the model used to create this example, there are no measures of scholarly productivity, teaching performance, or public service, all important factors to many institutions. If these are indeed important to a particular college/faculty and there is no apparent evidence of discrimination, it is likely that the only individuals for whom differences will positively exceed the standard error will be the unit "stars", and those for whom differences will negatively exceed the standard error will be those not meeting the minimum expectations of the unit. If this is not the case, the decision-maker should consciously consider why it is that the most productive and the least productive are paid at similar levels.[3]

Discussion

Bringing the issue of salary equity to the decision making table so that it is no longer simply an institutional or system issue but a clear factor in salary decisions is one of the primary outcomes of the implementation of this procedure. The information generated is relevant since it is college and discipline-specific and accounts for market factors; personalized, in that individual reports are produced which identify individuals whose work productivity and credentials are known rather than merely focusing on broad classes of individuals; conceptually understandable by presenting in a clear and straightforward manner results which rely on standard academic variables rather than illegal discriminating variables; and supportive of decision making since the results are presented in a non-threatening, non-directive manner, not to be viewed as conclusive but rather as guides or aids to discussion. It is fully acknowledged that the questions surrounding salary and salary equity are too complex to be resolved by statistical manipulations.

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[3] One tendency that is difficult to overcome is the readers inclination to view the projected salaries as absolute. Statistically, they provide estimates based on known but limited information. Substantively, they provide guidance in identifying potential inequities, not definitive answers.

Therefore, unlike approaches which seek to defend against charges of inequity, this approach is designed to provide effective decision support by incorporating institutional salary equity policies into the fabric of the decision-making process. The difference is not in terms of statistical procedure, but rather in terms of institutional philosophy and posture: monitoring for equity versus defending against discrimination; strategic versus reactive decision support.

Also, salary predictions generated by this approach are based solely on quantifiable academic variables (credentials and experience); that is ". . . without regard to race, sex, religion, age, national origin or handicap . . ." Such an approach permits the implementation of policy pursuant to the contemporary and social ideal of salary equity.

Postscript

The bulk of this paper stresses the legal aspects of the faculty salary issue and presents a case for data based salary decisions. This perspective clearly reflects the focus of the literature on the subject over the past twenty years. This fact is disturbing.

As early as 1980, NCHEMS recommended that, "Equity considerations must be built into the infrastructure of post-secondary education to ensure that they become integrated into all plans, resource allocations, processes, and activities" (Cloud, 1980). Additionally, affirmative action regulations require that all employment actions including salary determinations be documented and reviewed for equity. And, the one common thread that permeates the literature is "documentation." But, if the literature is any indication, too few institutions have made equity a strategic initiative and positioned themselves to assume control and responsibility for equity issues. Instead, they have tended to allow control to be exerted from outside, primarily from federal legislation. The concept of equal opportunity, or in this case equal pay for equal work, is not going to go away. Why then, is higher education still, after 20 years, reacting to the issue on an ad hoc basis?

Why do we continue to abdicate control? Perhaps the answer lies, at least in part, in the following observation regarding an administrator's decision to settle or proceed with litigation. "It would seem that administrator's lose either way: litigation is costly and damages in class action suits could be in the millions of dollars, while some attempts to ameliorate prior salary discrimination can actually engender litigation" (Hendrickson and Lee, 1983). Indeed, if an institution were to document its salary decisions and review them for equity, it would be responsible to take positive action where evidence of inequity is found. Therein lies the commitment--and the control.

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PATTERNS OF FUND-RAISING PROCEEDS AND COSTS, 1982-83 THROUGH 1986-87

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ABSTRACT

This paper summarizes a set of recent studies on patterns of private support, costs, and staffing for a group of private universities and colleges. For 69 colleges, total private support averaged $5,874,000 during the five year period from 1982-83 through 1986-87, rising 15% per year, and amounting to 30% of the educational and general expenditures of those institutions. For 33 universities, gifts totalled an average of $42,055,000, rose 18% per year, and amounted to 20% of E&G expenditures. The ranges on all these values were very wide. For the colleges, gifts from alumni constituted an average of 43% of total support, and amounted to $172 per alumnus of record; for the universities, they represented 29% of total support, and amounted to $161 per alumnus.

Additional studies for a subset of 18 universities and 31 colleges showed that the percent of alumni contributing and the average alumni gift size rose steadily and substantially with time since graduation. About the same proportions of alumni and of alumnae gave, but alumni gifts were noticeably larger. A higher proportion of alumni of undergraduate and medical programs gave than did those from graduate programs or other professional programs. Graduates of medical and other professional programs gave larger gifts. Both the colleges and the universities were heavily dependent on large gifts: gifts of $100,000 or more constituted 50% of total giving to these colleges and 61% of giving to these universities.

The 31 colleges dedicated 4.4% of their E&G budgets to fund-raising, spending 13.2 cents per dollar raised. Equivalent figures for the 18 universities were 1.9% and 10.1 cents. For the nine universities that participated in both the 1984-85 and the 1986-87 surveys, the portion of the budget spent on fund-raising and the cents per dollar raised rose for seven of the nine; six of the nine saw their fund-raising proceeds rise in relation to their budgets. Although the universities employed more people and spent more on fund-raising than did the colleges, the distributions were remarkably similar. For expenses, 63% went for salaries to staff, 4% non-employees, 2% equipment, 31% other expenses. For personnel, half were on direct fund-raising, 15%

on annual funds, 35% on other programs; of the balance, 10% were in management, 40% support services.

BACKGROUND

Under the auspices of the Tufts-EDUCOM Data-Sharing Project, and with funding from the William and Flora Hewlett Foundation, the authors have conducted a series of studies of fund-raising proceeds, cost, and staffing in recent years. (See bibliography for complete listing.)

The circulation of these papers has been restricted, since they contain data that the institutions involved agreed to share only with the other study participants. Several of the papers were based on data that have since been published in the annual Voluntary Support Of Education surveys by the Council For Aid To Education (CFAE); since these data are now public, we have identified the institutions in this summary. Other papers were based on information supplied in confidence to the Tufts-EDUCOM Data-Sharing Project. In these cases we provide a list of the institutions involved, and are publishing only statistical summaries of the data. Researchers wishing to learn more about the methodology or to obtain access to the base data are encouraged to contact the authors directly.

The eighteen universities included in the confidential study were Brown University, Case Western Reserve University, Cornell University, Dartmouth College, Duke University, Emory University, Georgetown University, George Washington University, Lehigh University, University of Miami, Northwestern University, Rice University, Southern Methodist University, Syracuse University, Tufts University, Tulane University, and Washington University (St. Louis.) The thirty-one colleges were Allegheny College, Bowdoin College, Bryn Mawr College, Bucknell University, Carleton College, Claremont-McKenna College, Colgate University, Connecticut College, Davidson College, Denison University, Drew University, Gettysburg College, Haverford College, Hollins College, Juniata College, Kenyon College, Macalester College, Mills College, Moriavian College, Oberlin College, Randolph-Macon College, Scripps College, Swarthmore College, Trinity College, University of the South, Ursinus College, Washington College, Wheaton College, Whitman College, Williams College, and Wittenberg University.

For simplicity, the term "alumni" is used throughout to designate all male and female graduates; where the distinction is important, other terms are used.

FINDINGS

Trends in overall fund-raising proceeds

Fund-raising results are notoriously choppy, varying significantly from one year to the next depending on the timing of sizeable gifts. For that reason, we calculated average values for the five-year period from 1982-83 through 1986-87, working from data the institutions supplied to CFAE.

For the 69 private colleges studied, the mean total private support for this period was $5,874,000, but ranged from a high of $18,296,000 to a low of $774,000. The colleges achieving the highest mean total support during the period were Smith, Pomona, Wellesley, Trinity University, Williams, Vassar, Lafayette, Mt. Holyoke, and Amherst, all of which averaged over $10,000,000. (Table 1)

The total support received was equivalent to a mean of 30.4% of the educational and general (E&G) expenditures these colleges incurred, but the range was from 75.9% to 8.1%. For Pomona, Claremont-McKenna, Reed, Washington College, Whitman, and Southwestern, private support totalled over 50% of E&G expenditures. (Table 1)

On average, these schools had increased their total private support at an annual rate of 14.8%, well above such economic indicators as GNP (4.8%), CPI (6.8%) and the Higher Education Price Index (6.9%). The colleges whose total private support increased most rapidly during the period were Lafayette, Allegheny, Wheaton, Washington College, Grinnell, Hamilton, Trinity University, Oberlin, Bucknell, Mills, Hobart and William Smith, Gettysburg, and Scripps, all of which achieved rates of increase of 25% or better. (Table 1)

The magnitude of the dollar figures for the 33 private universities studied is far higher, but the leverage provided by those dollars is smaller, given the range of the activities in which these institutions engage. Their mean total private support for this period was $42,055,000, but ranged from $141,398,000 to $3,284,000. The universities achieving the highest mean total support during the period were Stanford, Cornell, Yale, Columbia, Washington University, Princeton, Pennsylvania, Chicago, Johns Hopkins, and Duke, all of which averaged over $50,000,000 for the five-year period. (Table 2)

The total support received was equivalent to a mean of 20.2% of the educational and general (E&G) expenditures at these universities, but the range was from 43.0% to 6.8%. For Princeton, Baylor, Rice, Dartmouth, Brandeis, Washington University, Texas Christian, and Southern Methodist, private support totalled over 25% of E&G expenditures. (Table 2)

On average, these schools increased their total private support somewhat faster than did the colleges – 18.4% per year. The universities whose total private support increased most rapidly during the period were Washington University, University of Miami, Cornell, Syracuse, Johns Hopkins, Stanford, Carnegie Mellon, Vanderbilt, Duke, and George Washington, all of which achieved rates of increase of 25% or better. (Table 2)

Trends in alumni giving

The 69 private colleges realized an average of $2,757,000 from their alumni during this five-year period. Smith, Wellesley, Vassar, Williams, Lafayette, Amherst, Swarthmore, Grinnell, Mt. Holyoke, Bryn Mawr, and Colgate all received an average of $5,000,000 or more. (Table 1)

These schools are heavily dependent on contributions from alumni, whose gifts accounted for an average of 42.7% of all support received during the period. Those colleges most reliant on alumni support were Gustavus Adolphus, Swarthmore, Vassar, Lafayette, Holy Cross, Grinnell, Bowdoin, Wellesley, Denison, and Smith, where alumni contributions amounted to 65% or more of all gifts received. (Table 1)

A composite measure – alumni support per alumnus of record – is affected both by the proportion of alumni that give and the average size of their gifts. The two components are important, but data to calculate them separately were not available until 1985-86. On the combined measure, these colleges received alumni support amounting to an average of $172 per alumnus of record. Williams, Reed, Lafayette, Scripps, Amherst, Hamilton, and Swarthmore all received in excess of $400 per alumnus of record. (Table 1)

The 33 private universities realized an average of $12,204,000 from their alumni during this five-year period. Stanford, Yale, Princeton, Cornell, Columbia and Dartmouth all received an average of $20,000,000 or more. (Table 2)

These schools are less dependent on contributions from alumni than are the colleges. Alumni gifts accounted for an average of 28.6% of all support received during the period. Those universities most reliant on alumni support were Dartmouth, Lehigh, Princeton, Brown, and Yale, where alumni contributions amounted to 40% or more of all gifts received. (Table 2)

In terms of alumni support per alumnus of record, these universities resembled the colleges studied. The universities received alumni support amounting to an average of $161 per alumnus of record. Only Princeton and Dartmouth received in excess of $400 per alumnus of record.

Alumni giving by date of graduation, gender, and school.

Alumni giving for 1986-87 were examined for patterns of giving by decade of graduation, by gender, and by school from which the degree was received.

The growth patterns of these colleges and of these universities differ significantly, a factor that needs to be borne in mind in any comparison of alumni. While graduates of the 1980s constituted a mean of 21% of the total alumni of record for the colleges and 22% for the universities, these new graduates represented as much as 30-31% at some institutions (indicating rapid recent growth and a younger alumni body) and as little as 13-14% at others (indicating a very stable historical enrollment pattern and an older alumni population.) (Table 3)

The most aggressive colleges and universities in the group solicited gifts from all alumni. The colleges solicited 89% of their alumni on average; the universities, with larger alumni populations, solicited 83% on average. All colleges in the sample solicited gifts from at least two-thirds of their alumni; some of the universities solicited as little as one third. (Table 3)

For 1986-87, this group of colleges received gifts, on average, from 38% of their alumni. The participation rate rose steadily, from 28% for 1980s graduates to 52% of graduates of the 1930s. A similar pattern appeared among these universities: on average, 29% of the alumni contributed, but the percentage rose from 21% of the 1980s graduates to 38% of the 1930s graduates. A cautionary note: it may be that some institutions purge from their records those alumni with whom they have completely lost touch, and those who ask not to be solicited or associated with the university. The result is that, over time, the count of "alumni of record" drops. Thus, a constant number of faithful donors could, over the years, appear as a rising percentage of "alumni of record." (Table 3)

The average size of gifts from alumni also rises sharply over time. For the colleges, it rose from $64 for 1980s graduates to $1,707 for 1930s grads. The equivalent figures for the university sample were $137 to $2,139. (Table 3)

The colleges and universities seem to solicit gifts from their male and female graduates with the same intensity. Among college alumni and alumnae, about the same proportion contributed – 36% and 38%. For the universities, 34% of the men gave, vs. 27% of the women. The average gift size was noticeably larger for men than for women, however, in both colleges and universities – $572 vs. $324 in these colleges, and $808 vs. $396 for the universities. We did not have data in this study to determine whether this pattern of different gift sizes changed with time since graduation. Since the proportion of women is much smaller in older classes, and since giving rises by time since graduation, it is possible that this pattern of larger gifts from men will fade. (Table 4)

These universities solicited gifts from 75-80% of the graduates of all their programs. Participation rates by alumni of undergraduate programs and of medical programs were 30%, well above the giving rates of graduate program alumni (16%) and alumni of other professional programs such as law and business (24%.) Those alumni of other professional programs who did give, however, gave much more generously, with an average gift of $1464, vs. average gifts of $836 from medical graduates, $565 from undergraduates, and $300 from graduate program alumni. (Table 4)

The importance of large gifts

Both these 31 colleges and these 18 universities were heavily dependent on large gifts. Gifts of $100,000 and more constituted 50% of the total dollars received by these colleges in 1986-87, and 61% of all gifts to these universities. The colleges received one quarter of their total gifts in anounts of $100,000 to $500,000, and another quarter in gifts of $500,000 and up. The universities received 34% of their total gifts in amounts of $1,000,000 and up, and 27% in gifts of $100,000 and more. Note: the Danforth Foundation gift to Washington University was large enough to have increased the university percentages somewhat over what would otherwise have been expected. (Table 5)

Fund-raising cost and staffing

For 1986-87, total private support represented an average of 34.7% of E&G expenditures for the 31 colleges sampled, and 20.6% for the 18 universities. The colleges spent 4.4% of their E&G budgets on fund-raising, whereas the universities spent 1.9% of their larger budgets. The fund-raising expenditures for these colleges amounted to 13.4 cents per dollar raised, on average, vs. 10.1 cents for the universities, which tended to receive larger gifts. (Table 6)

Nine universities had participated in a 1984-85 study as well as the one for 1986-87, permitting a comparison of the results. It is interesting to note that, on average, the leverage provided by private support remained about the same for these nine institutions, but that the percentage of budget spent on fund-raising rose from 1.9% to 2.2%, and the cost per dollar raised rose from 10.6 cents to 12 cents. Six of the nine institutions increased their fund-raising leverage. Seven of the nine spent larger shares of their budgets and saw their cents per dollar raised go up. (Table 7)

Although these universities spent considerably more than did the colleges on fund-raising, their patterns of expenditure were remarkably similar: 63% on salaries for staff, 4% for payments to non-employees, 2% for equipment, and 31% for other expenses (except computing.) Because institutions differed in the way they incur and allocate computing costs, these costs were omitted from this comparison. (Table 8)

On average, the colleges employed 22 people for fund-raising, the universities 88. Again, the patterns of use were remarkably similar. In both colleges and universities, about half were involved in direct fund-raising, 15% on annual fund programs and 35% on other fund-raising programs. The remaining half were split about 10% to administration and management, about 40% to support services. (Table 8)

There were minor differences between the college and university groups in the composition of their fund-raising staff, with the college group having more exempt personnel (50% vs. 45%) and fewer non-exempt (43% vs. 46%). This difference may reflect the size of the support activity required for some of the larger university operations. Both colleges and universities found 7-8% of their fund-raising work force from students. (Table 8)

NEXT STEPS

We intend to repeat the studies of fund-raising proceeds each year, since institutions already collect these data for CFAE. The studies of fund-raising cost and staffing will be pursued perhaps every other year, potentially with a larger number of schools participating. The Council for the Advancement and Support of Education (CASE) is currently engaged in a joint project with the National Association of College and University Business Officers (NACUBO) to refine the categories for reporting fund-raising cost and staffing, and is collecting data for a sample of colleges and universities of all types. We are using their definition sets so that outcomes should be comparable with their findings, when released.

It will be useful in the next detailed study of giving patterns to collect data on alumni and alumnae giving by time since graduation, to see whether and to what extent the pattern of bigger gifts from men is continuing or fading.

An attempt will also be made to ascertain whether a purging of names from counts of alumni of record accounts for the fact that the proportion of alumni who give appears to rise with time since graduation.

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Table 1: TRENDS IN TOTAL PRIVATE SUPPORT AND IN ALUMNI SUPPORT
SELECTED PRIVATE COLLEGES, 1982-83 through 1986-87

Institution	Average Total Private Support ($000)	Total Support as % of E&G Exp.	(*) Average Annual % Incr. In Tot. Support	Average Support From Alumni ($000)	Alumni Support as % of Total Support	Alumni Support Per Alum. Of Record ($)
Albright College	1,202	10.4%	7.6%	383	31.9%	41
Allegheny College	4,027	23.5%	69.2%	1,753	43.5%	97
Alma College	2,532	23.1%	2.7%	541	21.4%	56
Amherst College	10,018	33.1%	16.6%	6,370	63.6%	412
Augustana College	2,147	14.3%	1.1%	636	29.6%	29
Austin College	4,087	37.7%	8.9%	446	10.9%	48
Babson College	1,477	8.1%	-23.5%	671	45.4%	42
Barnard College	4,203	15.2%	11.1%	2,330	55.4%	107
Bowdoin College	6,334	29.2%	9.7%	4,391	69.3%	355
Bryn Mawr College	9,860	37.5%	6.3%	5,450	55.3%	351
Bucknell University	7,142	19.5%	26.3%	3,568	50.0%	115
Carleton College	8,213	34.9%	18.3%	4,108	50.0%	229
Carroll College	1,188	11.8%	2.7%	375	31.6%	33
Centre College	3,510	49.6%	-2.6%	1,076	30.7%	142
Claremont-McKenna C.	7,987	67.8%	16.7%	988	12.4%	147
Colgate University	8,168	25.5%	15.9%	5,080	62.2%	234
Colorado College	7,116	32.7%	22.9%	1,940	27.3%	124
Connecticut College	4,716	22.9%	15.6%	2,338	49.6%	151
Davidson College	6,307	41.1%	10.7%	2,869	45.5%	197
Denison University	4,144	23.1%	3.9%	2,764	66.7%	152
Dickinson College	2,345	11.4%	4.1%	1,130	48.2%	76
Drew University	4,415	21.2%	17.4%	345	7.8%	29
Franklin & Marshall	3,934	17.0%	12.1%	1,451	36.9%	74
Gettysburg College	4,089	21.9%	25.0%	1,739	42.5%	100
Grinnell College	8,082	44.3%	35.0%	5,616	69.5%	283
Gustavus Adolphus C.	4,456	29.5%	9.2%	3,661	82.2%	269
Hamilton College	7,272	30.4%	31.0%	3,953	54.4%	411
Hamline College	2,799	18.0%	2.0%	1,053	37.6%	81
Haverford College	4,393	27.4%	3.9%	2,312	52.6%	323
Hobart & Wm. Smith	3,594	18.5%	25.8%	1,553	43.2%	108
Hollins College	3,278	34.4%	17.1%	1,359	41.5%	112
Holy Cross, Coll. of	5,534	26.1%	9.0%	3,851	69.6%	189
Juniata College	1,957	18.7%	15.3%	964	49.2%	112
Kenyon College	4,452	27.8%	16.5%	1,227	27.6%	133
Lafayette College	10,635	41.8%	76.0%	7,733	72.7%	437
Lawrence University	5,081	37.2%	22.6%	1,893	37.3%	107
Lewis & Clark C.	2,399	10.2%	3.4%	210	8.8%	14
Lynchburg College	1,385	11.6%	8.2%	411	29.6%	33
Macalester College	4,427	23.5%	-3.4%	922	20.8%	56
Middlebury College	7,967	26.3%	22.1%	2,910	36.5%	169
Mills College	6,426	48.9%	26.0%	3,776	58.8%	266

Table 1: TRENDS IN TOTAL PRIVATE SUPPORT AND IN ALUMNI SUPPORT SELECTED PRIVATE COLLEGES, 1982-83 through 1986-87 (continued)

Institution	Average Total Private Support ($000)	Total Support as % of E&G Exp.	(*) Average Annual % Incr. In Tot. Support	Average Support From Alumni ($000)	Alumni Support as % of Total Support	Alumni Support Per Alum. Of Record ($)
Moravian College	2,104	18.5%	5.2%	341	16.2%	30
Mt. Holyoke College	10,171	34.9%	19.2%	5,610	55.2%	221
Muhlenberg College	2,328	16.5%	11.4%	759	32.6%	60
Oberlin College	8,479	25.7%	27.6%	4,752	56.0%	135
Pitzer College	2,208	27.1%	21.8%	121	5.5%	36
Pomona College	18,161	75.9%	24.8%	4,230	23.3%	131
Randolph-Macon C.	3,056	38.5%	18.8%	806	26.4%	131
Reed College	8,584	60.0%	21.8%	4,330	50.4%	514
Ripon College	2,290	27.4%	9.9%	938	41.0%	105
Scripps College	4,266	47.8%	25.0%	2,049	48.0%	427
Smith College	18,296	48.5%	4.4%	12,154	66.4%	318
Southwestern Univ.	5,724	50.0%	2.4%	500	8.7%	51
St. Johns College	774	17.1%	-31.1%	172	22.3%	52
Swarthmore College	8,083	31.5%	14.0%	5,990	74.1%	410
Trinity College	4,874	22.4%	13.9%	2,732	56.1%	182
Trinity University	13,953	47.1%	28.8%	509	3.6%	33
Union College	5,666	20.0%	-3.3%	2,624	46.3%	163
Univ. of the South	7,079	42.7%	8.2%	1,826	25.8%	168
Ursinus College	1,621	17.7%	1.0%	618	38.2%	62
Vassar College	12,256	39.7%	22.0%	9,016	73.6%	339
Washington College	3,810	53.1%	44.6%	1,060	27.8%	144
Wellesley College	16,693	41.8%	13.8%	11,393	68.2%	365
Wesleyan University	7,667	17.3%	15.8%	4,011	52.3%	215
Wheaton College	4,875	30.8%	48.3%	2,441	50.1%	184
Whitman College	6,803	50.8%	8.6%	2,358	34.7%	254
Williams College	13,082	42.1%	7.9%	8,474	64.8%	516
Wittenberg Univ.	3,349	16.0%	0.5%	1,712	51.1%	82
Wooster, College of	5,771	28.0%	14.6%	2,586	44.8%	128
Maximum	18,296	75.9%	76.0%	12,154	82.2%	516
Mean	5,874	30.4%	14.8%	2,757	42.7%	172
Minimum	774	8.1%	-31.1%	121	3.6%	14

Source: Tufts-EDUCOM Data-Sharing Report #88-7.

Note: (*) Period covered is eight years, 1979-80 through 1986-87

Table 2: TRENDS IN TOTAL PRIVATE SUPPORT AND IN ALUMNI SUPPORT
SELECTED PRIVATE UNIVERSITIES, 1982-83 through 1986-87

Institution	Average Total Private Support ($000)	Total Support as % of E&G Exp.	Average Annual % Incr. In Tot. Support	Average Support From Alumni ($000)	Alumni Support as % of Total Support	Alumni Support Per Alum. Of Record ($)
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Baylor Univ.	26,564	40.9%	7.2%	6,585	24.8%	110
Boston Univ.	23,409	7.6%	18.8%	7,913	33.8%	56
Brandeis Univ.	20,433	27.1%	16.1%	657	3.2%	35
Brown Univ.	31,202	24.8%	23.5%	15,692	50.3%	297
Carnegie Mellon U.	26,347	22.5%	27.1%	7,005	26.6%	159
Case Western Res. U.	29,173	18.9%	4.2%	8,409	28.8%	105
Chicago, Univ. of	58,954	21.2%	8.3%	11,932	20.2%	132
Clark Univ.	3,284	11.9%	-1.4%	1,048	31.9%	62
Columbia Univ.	85,957	16.8%	14.4%	23,145	26.9%	128
Cornell Univ.	98,033	17.0%	34.0%	35,169	35.9%	201
Dartmouth College	36,852	29.4%	16.7%	20,912	56.7%	472
Duke Univ.	53,451	21.7%	25.3%	8,566	16.0%	118
Emory Univ.	23,040	15.8%	22.0%	2,927	12.7%	62
George Washington U.	11,865	6.8%	25.0%	4,135	34.8%	36
Georgetown Univ.	25,669	14.1%	10.0%	6,672	26.0%	105
Johns Hopkins Univ.	58,744	15.1%	29.9%	11,602	19.7%	178
Lehigh Univ.	18,350	23.6%	12.2%	10,113	55.2%	311
Miami, Univ. of	36,387	17.0%	35.6%	2,872	7.9%	44
New York Univ.	47,782	10.5%	6.4%	8,840	18.5%	49
Northwestern Univ.	45,685	15.4%	12.5%	13,428	29.4%	77
Pennsylvania, U. of	64,116	13.9%	16.1%	11,911	18.6%	67
Princeton Univ.	74,822	43.0%	15.1%	37,827	50.6%	706
Rice Univ.	22,797	30.5%	-1.3%	6,025	26.4%	245
Rochester, Univ. of	25,393	11.9%	7.7%	5,072	20.1%	87
So. Methodist U.	23,614	25.5%	4.5%	7,618	32.3%	117
Stanford Univ.	141,398	23.9%	28.1%	41,957	29.7%	346
Syracuse Univ.	15,573	9.5%	31.6%	5,362	33.8%	41
Texas Christian U.	14,017	27.6%	5.6%	2,699	19.3%	65
Tufts Univ.	19,017	14.1%	17.0%	4,801	25.2%	80
Tulane Univ.	26,887	21.8%	-9.0%	8,964	33.3%	130
Vanderbilt Univ.	31,468	18.4%	26.6%	10,848	34.5%	153
Washington Univ.	77,238	26.2%	94.8%	11,801	15.3%	165
Yale Univ.	90,278	23.1%	22.4%	40,209	44.5%	382
Maximum	141,398	43.0%	94.8%	41,957	56.7%	706
Mean	42,055	20.2%	18.4%	12,204	28.6%	161
Minimum	3,284	6.8%	-9.0%	657	3.2%	35

Source: Tufts-EDUCOM Data-Sharing Project Report #88-5

Table 3: ANALYSIS OF ALUMNI GIVING FOR ALL PURPOSES, BY DECADE OF GRADUATION 1986-87

	--31 Private Colleges--			-- 18 Private Univs. --		
	Max.	Mean	Min.	Max.	Mean	Min.
Alumni in decade as percent of alumni of record:						
1980s	30%	21%	13%	31%	22%	14%
1970s	36%	26%	16%	32%	25%	19%
1960s	23%	18%	13%	20%	18%	16%
1950s	18%	14%	11%	17%	15%	9%
1940s	14%	9%	1%	14%	10%	4%
1930s	20%	9%	0%	17%	9%	1%
Not indic.	29%	3%	0%	3%	0%	0%
Percent of alumni of record in decade solicited:						
1980s	100%	92%	66%	100%	85%	28%
1970s	100%	90%	66%	100%	85%	35%
1960s	100%	91%	60%	100%	85%	38%
1950s	100%	90%	72%	100%	84%	42%
1940s	100%	90%	65%	100%	83%	39%
1930s	100%	88%	49%	100%	74%	26%
Not indic.	100%	88%	78%	100%	81%	35%
Total	100%	89%	61%	100%	83%	34%
Percent of alumni of record in decade giving:						
1980s	55%	28%	9%	55%	21%	6%
1970s	68%	35%	14%	61%	28%	14%
1960s	72%	42%	23%	62%	32%	17%
1950s	75%	43%	21%	63%	33%	15%
1940s	76%	48%	22%	69%	35%	18%
1930s	85%	52%	19%	81%	38%	6%
Not indic.	100%	35%	11%	100%	35%	3%
Total	69%	38%	21%	62%	29%	13%
Alumni dollars given per alumnus of record, in decade: (dollars)						
1980s	127	20	4	163	37	4
1970s	183	51	14	133	54	12
1960s	1,131	224	23	761	184	18
1950s	931	254	20	1,185	293	53
1940s	1,755	317	39	939	319	56
1930s	2,658	736	37	2,415	883	136
Not indic.	18,182	3,516	4	12,748	2,105	3
Total	673	198	25	682	217	39
Alumni dollars given per alumni donor (average gift size), in decade: (dollars)						
1980s	321	64	32	334	137	45
1970s	353	141	64	403	190	80
1960s	2,782	457	66	908	399	98
1950s	1,716	584	95	1,817	656	206
1940s	7,002	915	100	1,922	892	288
1930s	9,652	1,707	168	3,884	2,139	386
Not indic	50,002	7,637	34	37,108	5,343	32
Total	1,961	549	113	1,211	608	268

Source: Tufts-EDUCOM Data-Sharing Project reports #88-14 and #88-15.

Table 4: ANALYSIS OF ALUMNI GIVING FOR ALL PURPOSES BY GENDER AND BY SCHOOL OF GRADUATION, 1986-87

	--31 Private Colleges--			-- 18 Private Univs. --		
	Max.	Mean	Min.	Max.	Mean	Min.
BY GENDER:						
Percent of alumni of record solicited:						
Men	100%	89%	61%	100%	80%	28%
Women	100%	88%	63%	100%	79%	31%
Percent of alumni of record giving:						
Men	72%	36%	8%	51%	34%	20%
Women	63%	38%	22%	35%	27%	14%
Alumni dollars given per alumnus of record: (dollars)						
Men	813	252	3	588	194	30
Women	967	139	10	360	110	13
Alumni dollars given per alumni donor (average gift size): (dollars)						
Men	1,421	572	32	2,770	808	147
Women	1,961	324	40	756	396	116
BY SCHOOL OF GRADUATION:						
Percent of alumni of record solicited:						
Undergrad.				100%	84%	33%
Graduate				100%	80%	23%
Medical				100%	80%	41%
Other				100%	76%	17%
Percent of alumni of record giving:						
Undergrad.				62%	30%	12%
Graduate				26%	16%	4%
Medical				48%	30%	5%
Other				37%	24%	12%
Alumni dollars given per alumnus of record: (dollars)						
Undergrad.				682	205	28
Graduate				75	37	6
Medical				374	213	76
Other				1,612	243	49
Alumni dollars given per alumni donor (average gift size): (dollars)						
Undergrad.				1,211	565	224
Graduate				1,381	300	44
Medical				1,923	836	360
Other				13,327	1,464	92

Source: Tufts-EDUCOM Data-Sharing Project reports #88-14 and #88-15.

Table 5: ANALYSIS OF TOTAL GIVING, BY GIFT SIZE, 1986-87

DOLLARS CONTRIBUTED: ($000)	--31 Private Colleges--				-- 18 Private Univs. --			
	Max.	Mean	Min.	Total	Max.	Mean	Min.	Total
Up to $ 999	2,105	684	0	21,195				
$ 1,000 to $ 4,999	2,141	612	0	18,991				
$ 5,000 to $ 9,999	3,617	481	115	14,923				
$ 10,000 to $ 24,999	1,936	635	221	19,670				
$ 25,000 to $ 49,999	1,823	609	126	18,894				
$ 50,000 to $ 99,999	2,288	663	115	20,556				
$ 100,000 to $ 249,999	2,587	1,186	187	36,755				
$ 250,000 to $ 499,999	1,870	655	0	20,299				
$ 500,000 to $ 999,999	1,854	1,011	0	31,329				
Cum. $1,000,000 and up	11,476	845	0	26,208				
Up to $ 49,999					35,840	14,837	5,522	267,068
$ 50,000 to $ 99,999					11,044	3,621	997	65,173
$ 100,000 to $ 499,999					24,745	9,528	1,801	171,505
$ 500,000 to $ 999,999					13,183	3,827	0	68,890
$1,000,000 to $4,999,999					29,023	8,954	0	161,169
$5,000,000 and up					55,000	7,611	0	136,994
Up to $ 49,999	11,622	3,021	462	93,673	35,840	14,837	5,522	267,068
$ 50,000 to $ 99,999	2,288	663	115	20,556	11,044	3,621	997	65,173
$ 100,000 to $ 499,999	4,457	1,841	187	57,054	24,745	9,528	1,801	171,505
$ 500,000 to $ 999,999	1,854	1,011	0	31,329	13,183	3,827	0	68,890
Cum. $1,000,000 and up	11,476	845	0	26,208	84,023	16,565	0	298,163
PERCENT OF TOTAL DOLLARS CONTRIBUTED:								
Up to $ 999	38.2%	10.9%	0.0%	9.3%				
$ 1,000 to $ 4,999	20.4%	9.1%	0.0%	8.3%				
$ 5,000 to $ 9,999	25.3%	6.2%	1.8%	6.5%				
$ 10,000 to $ 24,999	14.0%	8.8%	2.6%	8.6%				
$ 25,000 to $ 49,999	13.7%	8.2%	3.8%	8.3%				
$ 50,000 to $ 99,999	19.3%	8.9%	2.0%	9.0%				
$ 100,000 to $ 249,999	46.8%	17.3%	6.3%	16.1%				
$ 250,000 to $ 499,999	25.6%	9.2%	0.0%	8.9%				
$ 500,000 to $ 999,999	31.5%	13.3%	0.0%	13.7%				
Cum. $1,000,000 and up	60.6%	8.1%	0.0%	11.5%				
Up to $ 49,999					65.2%	34.9%	15.5%	30.7%
$ 50,000 to $ 99,999					12.7%	7.7%	3.9%	7.5%
$ 100,000 to $ 499,999					42.7%	21.6%	7.0%	19.7%
$ 500,000 to $ 999,999					17.7%	8.6%	0.0%	7.9%
$1,000,000 to $4,999,999					43.2%	18.0%	0.0%	18.5%
$5,000,000 and up					49.8%	9.3%	0.0%	15.7%
Up to $ 49,999	111.6%	43.2%	8.2%	41.0%	65.2%	34.9%	15.5%	30.7%
$ 50,000 to $ 99,999	19.3%	8.9%	2.0%	9.0%	12.7%	7.7%	3.9%	7.5%
$ 100,000 to $ 499,999	72.4%	26.5%	6.3%	25.0%	42.7%	21.6%	7.0%	19.7%
$ 500,000 to $ 999,999	31.5%	13.3%	0.0%	13.7%	17.7%	8.6%	0.0%	7.9%
Cum. $1,000,000 and up	60.6%	8.1%	0.0%	11.5%	93.0%	27.3%	0.0%	34.2%

Source: Tufts-EDUCOM Data-Sharing Project reports #88-8 and #88-9

Table 6: FUND-RAISING LEVERAGE, EFFORT, AND COST-EFFECTIVENESS, 1986-87

	--31 Private Colleges--			-- 17 Private Univs. --		
	Max.	Mean	Min.	Max.	Mean	Min.
E&G Expenditures ($000)	49,350	22,725	9,073	685,013	225,662	86,827
Grand Total Support ($000)	18,224	7,428	2,527	149,702	46,693	15,251
Fund-Raising Expense ($000)	2,947	930	252	7,918	4,006	927
LEVERAGE: (Support as percent of E&G Expenditures)	94.7%	34.7%	18.4%	33.3%	20.6%	7.4%
EFFORT: (Percent of E&G spent on fund-raising)	15.4%	4.4%	1.5%	3.3%	1.9%	0.4%
COST-EFFECTIVENESS: (Fund-raising expense as percent of support)	23.6%	13.4%	4.8%	18.2%	10.1%	4.0%

Source: Tufts-EDUCOM Data-Sharing Project reports #88-8 and #88-9

Table 7: CHANGES IN FUND-RAISING LEVERAGE, EFFORT, AND COST-EFFECTIVENESS 1984-85 to 1986-87, SELECTED PRIVATE UNIVERSITIES

		Leverage	Effort	Cost-Effect.
Inst. A:	1984-85	17.4%	0.7%	3.8%
	1986-87	21.9%	0.9%	4.3%
Inst. B:	1984-85	21.0%	2.1%	10.0%
	1986-87	23.9%	2.6%	10.8%
Inst. C:	1984-85	14.2%	2.0%	14.2%
	1986-87	16.4%	1.9%	11.8%
Inst. D:	1984-85	14.8%	2.7%	18.5%
	1986-87	16.0%	2.9%	18.2%
Inst. E:	1984-85	20.1%	1.6%	8.1%
	1986-87	18.6%	1.7%	9.0%
Inst. F:	1984-85	31.9%	2.8%	8.7%
	1986-87	31.9%	3.1%	9.8%
Inst. G:	1984-85	16.3%	1.6%	9.8%
	1986-87	17.9%	3.3%	18.2%
Inst. H:	1984-85	10.5%	1.5%	14.4%
	1986-87	12.5%	1.4%	11.4%
Inst. I:	1984-85	25.3%	2.1%	8.1%
	1986-87	12.7%	1.9%	14.8%
Average, 9 Insts.:	1984-85	19.1%	1.9%	10.6%
	1986-87	19.1%	2.2%	12.0%

Source: Tufts-EDUCOM Data-Sharing Project reports #87-9 and #88-8

Table 8: ANALYSES OF FUND-RAISING COSTS AND STAFFING, 1986-87

	--31 Private Colleges--			-- 17 Private Univs. -		
	Max.	Mean	Min.	Max.	Mean	Min.
COMPONENTS OF FUND-RAISING COST:						
Dollars ($000)						
Salaries for own people	1,468	555	189	4,179	2,606	422
Non-employee payments	242	40	0	710	156	4
Equipment	66	15	0	248	90	0
Other (except computing)	1,638	316	55	0	1,259	211
Percent of total:						
Salaries for own people	78.9%	63.2%	33.7%	79.2%	62.7%	37.6%
Non-employee payments	18.0%	3.2%	0.0%	17.0%	4.1%	0.2%
Equipment	8.3%	1.6%	0.0%	4.9%	2.1%	0.0%
Other (except computing)	57.5%	29.4%	14.0%	59.0%	31.2%	15.8%
FUND-RAISING PERSONNEL BY ACTIVITY AREA:						
FTE personnel:						
Annual fund	7.0	3.1	0.0	33.0	14.0	0.0
Other fund-raising	22.2	6.9	1.4	57.0	33.0	6.0
Subtotal, fund-raising	29.2	10.1	3.3	80.0	47.0	9.0
Admin. & mgmt.	5.0	1.8	0.0	36.0	9.0	1.0
Support	22.0	9.6	0.0	58.0	32.0	10.0
Total	46.5	21.5	9.0	137.0	88.0	26.0
Percent of total:						
Annual fund	42.9%	14.8%	0.0%	33.0%	15.4%	0.0%
Other fund-raising	100.0%	34.5%	5.8%	71.5%	37.3%	14.8%
Subtotal, fund-raising	100.0%	49.3%	25.0%	73.8%	52.6%	21.9%
Admin. & mgmt.	19.1%	8.5%	0.0%	27.8%	10.1%	1.6%
Support	63.4%	42.2%	0.0%	71.9%	37.3%	17.2%
FUND-RAISING PERSONNEL BY TYPE:						
FTE Personnel:						
Exempt	25.5	10.7	0.0	61.0	40.0	3.0
Non-Exempt	9.0	19.5	3.0	70.0	39.0	15.0
Student	5.3	1.4	0.0	26.0	9.0	0.0
Percent of total:						
Exempt	72.6%	50.3%	0.0%	62.9%	44.8%	7.7%
Non-exempt	66.7%	42.6%	21.4%	83.9%	46.3%	29.0%
Student	33.3%	7.1%	0.0%	25.5%	8.8%	0.0%

Source: Tufts-EDUCOM Data-Sharing Project reports #88-8 and #88-9

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THE USE OF MICROCOMPUTER IN DISCIPLINE COST ANALYSIS

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ABSTRACT

The Discipline Cost Analysis is one of the valuable tools of the college administrators for making decisions of both short- and long-term significance. The cost per course, cost per student credit hour, and the cost per full-time equivalent student by discipline can be analyzed using Lotus 1-2-3 with a personal computer. The microcomputer approach provides flexibility in preparing the cost data and serves as a tool for "what if" scenarios looking at past trends and future discipline and cost projections. A step by step approach of determining the unit cost is discussed.

INTRODUCTION

The Discipline Cost Analysis (DCA) is considered important not only for internal management purposes but also as a means of fulfilling the requirements of governing agencies. Among other uses, DCA data at the colleges will: (1) aid in long-range planning for curriculum development, (2) provide a basis for resource allocation among disciplines, (3) facilitate the decision making process with regard to efficient/inefficient class size, (4) provide a basis for funding requests, (5) aid in the process of budget preparation, review, and evaluation, and (6) provide a financial basis for evaluating programs. DCA data at the governing agencies will: (1) aid in the solution of problems relating to the allocation of human and financial resources, (2) provide community colleges with systemwide data on the cost per full-time equivalent student by HEGIS discipline, and (3) provide each community college with cost data related to other community colleges of similar size.

METHODOLOGY

One of the goals of the analysis is to assign and measure costs so that the course cost can be known and amalgamated to the discipline level. Costs are assigned and measured at the end of the fiscal year when the actual cost of operation is known.

Total costs to be analyzed include all expenditures of the current general restricted and unrestricted funds with the exception of federal student aid. These total costs are separated into three categories: direct instructional costs, additional direct instructional costs, and indirect costs.

- Direct Instructional Costs are faculty compensations which include salaries and cost payments for retirement plans, social security, medical plan, disability, etc. Compensation for a full-time faculty member who does not teach a full-time load but who performs non-classroom related duties is divided between direct instructional costs (compensation for courses taught), additional direct instructional costs (compensation for department related responsibilities), and indirect costs (compensation for institution-wide responsibilities). The overload compensation is divided among all courses taught by faculty members. Courses taught during the summer sessions are considered overload. In cases where a credit faculty member teaches non-credit courses, compensation for the non-credit component is pro-rated and included in the expenditures for continuing education. Compensation for those persons on sabbatical leave are treated as indirect costs.

Additional Direct Instructional Costs are all costs of operating an academic unit (department, division, etc.) other than faculty compensation. Costs include salaries for secretaries, laboratory assistants, pro-rated salaries for unit heads and curriculum coordinators, travel, equipment, supplies, etc. Additional direct instructional cost rate per student credit hour (SCH) is derived by dividing the total ADIC by the total number of SCH taught by the academic unit.

Indirect Costs are all costs other than faculty compensation and additional direct instructional costs. They are general administration costs including the library, student services, plant operations, etc. The indirect cost rate per student credit hour is derived by dividing the total indirect costs by the total number of SCH plus total number of equated student credit hours (non-credit). Indirect costs are to be assigned to continuing education area.

Total costs of continuing education should include both the direct cost of operating the continuing education division and indirect costs allocated to the division. The latter is the product of the number of equated credit FTE students times 30 times the indirect cost rate per SCH.

CONCLUSIONS AND IMPLICATIONS

The Lotus 1-2-3 Program used for the Discipline Cost Analysis is simple to operate. No knowledge of programming is necessary. One can learn the operation in less than a week. It takes a minimum amount of time to set up, develop, and use the system. Once the system is in place, it can be modified and maintained with a minimum of effort. Different reports can be generated based on the needs of the institution. Some examples include: State DCA Report; DCA Trend Report;

Cost Analysis by General, Occupational, and Continuing Education; Cost Analysis of Courses by Division of Academic Unit; and DCA Institutional Summary.

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Alumni Research in Practice:
Assessment of the College and Post-Graduate Experiences

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Alumni research is an area of Institutional Research that is rapidly developing, generating interest and insight into the effectiveness of institutions of higher education. As a product of the institution, the graduates of colleges and universities present a valuable resource for evaluating the benefits and shortcomings of the education provided. Smith College, a four-year liberal arts college for women, has been involved for many years in developing a substantial alumnae database. The development of the Alumnae Biography databases entailed overcoming several impediments. This undertaking required the cooperation of many departments and a sizable investment of the resources of the college.

The Alumnae Biography office maintains biographical and statistical data on over 60 percent of the alumnae of the college. The goal of the office is to seek out and maintain current information on the alumnae population, acting as a networking resource and producing reports needed for varied applications throughout the institution. The future will bring growth in both the depth and range of the Alumnae Biography databases. Ongoing updates to the current data holdings are scheduled, and the provision for a greater level of interaction between offices with direct alumnae contact is being established. Additionally, the opportunity for longitudinal studies of alumnae from the time of graduation onward is an opportunity that is being explored.

As an established resource, Smith College's Alumnae Biography provides a timely example for many institutions initiating a comprehensive alumni research component to their Institutional Research offices. The application of the great wealth of information contained in the Alumnae Biography databases and its utilization by many college offices has added greatly to the capacity and potential of the Office of Institutional Research to respond to the needs of Smith College community.

PURPOSE

The major usage of the data focuses on the roles and patterns found in the adult lives of Smith Alumnae and their relationships to the college over time. Examples of the undertakings that have been completed to date are a comparison of the Smith data with female graduates of other institutions of similar stature; research for the American Chemical Society's Petroleum Research Fund on alumnae with undergraduate majors in biochemistry and chemistry; and a report on alumnae in medicine with a specific focus on cancer research. Further, the study of patterns of affiliation and leadership, comparative salary categories and the career paths based upon the undergraduate major of the alumna are areas of current investigation. The databases provide a rich resource for many other areas of investigation that are being further explored.

The areas of investigation that are examined in this paper by the authors include: alumnae assessment of the undergraduate experience, graduate education, occupational field categories of current alumnae employment, influences on comparative salary categories, and alumnae affiliation. The assessment of the undergraduate experience is analyzed across decades and through varied survey instruments. The analysis of the graduate education experiences of Smith alumnae examines the number of respondents attending graduate school, the type of graduate degree pursued/attained, and the number of years between college graduation and entrance into graduate school. These factors are also reviewed for indicators of patterns over time.

A pattern of change in career paths for women has been documented over the past several decades (Hardesty & Jacobs, 1986) and is explored in this distinctive population of college educated women. The United States Bureau of the Census (1988) has documented a Profile of Women: Income, Security and Economic Status that includes a focus on the predictors of median earnings, such as marital status, age, and education level. The relationships between comparative salary categories and these factors are reviewed for the population of Smith alumnae. Finally, the level of affiliation of the alumna to her alma mater is explored through her willingness to serve the college, participation in alumnae organizations and attitudinal assessment of the institution.

METHODOLOGY

The questionnaire providing the foundation for the Alumnae Biography database was sent to all of the living alumnae from the classes 1900 through 1980. The twenty page survey requests demographic data, career, education and volunteer activity information, as well as attitudinal and assessment responses. The total initial mailing sample was 31,909 for all classes, with a follow up sent to 22,010 non-respondents. The final base sample size for living alumnae with working addresses is 30,880.

Alumnae from the classes of 1981 through 1985 were surveyed with a Recent Alumna Questionnaire that was proportionately tailored from the more comprehensive Alumna Biography Questionnaire. Beginning with the class of 1983, each senior is surveyed with a Senior Survey that establishes her alumna record upon graduation. A follow up survey is conducted one year after graduation, and a Recent Alumnae Questionnaire is administered two to three years later.

The Career Development Office administers a one year out update, and the Alumnae Association conducts an update every three years for its Alumnae Register, a networking directory. A number of college offices and departments provide additional information on alumnae. All of the updates are coordinated with the Alumnae Biography format and the data is entered either as an update to the alumna's current record if one exists, or a new record is created for the alumna. Ongoing corrections and follow up surveys are planned to maintain and update the growth of the Alumnae Biography databases.

The data is maintained in both biographical and statistical format, providing the basis for networking, biographical composites and aggregate reporting. The biographical database is comprised of multiple record types that reflect the format of the Alumnae Biography Questionnaires and contains both coded and text information. Database management systems for this data allow for access to an individual alumna's record, as well as general reporting of various classification of alumnae (e.g. a listing of all alumnae from the New York City area employed in banking). The statistical data set is derived from the biographical database and contains categorical elements of the alumna's record. The statistical databases are maintained and accessed through SPSSX (SPSS, 1988).

SAMPLE DEMOGRAPHICS

Several hundred alumnae from the classes of 1900-1919 responded to the Alumnae Biography survey, and over 65.1 percent (19,389) of the 1920-1980 class members have returned completed questionnaires. Over 55.0 percent of the alumnae from the classes of 1981-1985 (1,914) responded to either the Recent Alumnae Questionnaire or the corresponding follow up survey. The response rates of the Senior Surveys have been remarkably high, with an overall response rate of 91.4 percent of the classes of 1984-1988 in part due to the proximity of the graduate to the college at this time. Table 1 further documents the response rates of the various classes to the instruments that comprise an alumna's Biography record.

Table 1

Response Rates of Alumnae to the Alumnae Biography Questionnaires
by Class Years in Decades

Class Years	Original Population	Returned	Response Rate
Alumnae Biography Questionnaire			
1900-1949	13,159	7,383	56.1%
1950-1969	11,358	7,021	61.8%
1970-1980	7,392	4,580	61.9%
Total	30,880	18,984	61.5%
Recent Alumnae Questionnaire			
1981	670	428	63.9%
1982	683	458	67.1%
1983	692	382	55.2%
1984	740	327	44.2%
1985	695	319	45.9%
Total	3,480	1,914	55.0%
Senior Survey			
1984	740	731	96.5%
1985	695	671	96.5%
1986	664	635	95.6%
1987	685	621	90.6%
1988	704	521	74.0%
Total	3,488	3,179	91.4%

The "returned" column of the figures in Table 1 incorporates all information that has been updated from various sources. To date, 6898 Alumnae Biography respondent records have been updated since their inception and 3466 former non-respondents have been added to the Alumnae Biography database from scheduled updates.

While the majority of the Alumnae Biography respondents from the classes of 1900 to 1986 are Caucasian (79.4%), there has been an increase in the number of Black alumnae respondents in the more recent classes; from less than one percent of the respondents in the classes of 1940-1949 (0.1%) to almost three percent from the classes of 1980-1986 (2.8%).

Smith Alumnae are dispersed in all 50 states of the United States, Puerto Rico and the U.S. Virgin Islands. Notably, a large proportion of Smith Alumnae reside in the Atlantic seaboard states. Over 1200 alumnae are currently living in 94 foreign countries throughout the world.

RESULTS/FINDINGS

The underlying intent of the presenters of this paper is to give an overview of the development of the Alumnae Biography and to review several major areas of research on this data. In organizing the results of this investigation, the researchers have divided this section into the following divisions: assessment of the undergraduate experience,alumnae affiliation, graduate education, occupational field categories, and influences on comparative salary categories.

Assessment of the Undergraduate Experience

The satisfaction level of Smith Alumnae with their undergraduate experience is extremely high. Of the Senior Survey respondents from the classes of 1984 to 1988, 85.3 percent have assessed the Smith experience as mostly positive or very positive. Alumnae who responded to the Recent Alumnae Questionnaire, representing the classes of 1981-1985, responded with a similar positive assessment, as 87.4 percent report their experience as mostly positive or very positive. Also, approximately 45 percent of the respondents from the classes of 1900-1980 have assessed their undergraduate experience at Smith as *very positive.*

Alumnae Affiliation

A positive assessment is a natural predecessor to strong alumni affiliation. Moreover, alumni affiliation can also be measured by a compatibility of the attitudinal assessment of college objectives. The importance of the contribution of a women's college is confirmed by Smith Alumnae, as 67.8 percent of the respondents assessed the contribution as *very positive.* Also, 46.6 percent of the respondents are *very sympathetic* with the feminist movement and 81.9 percent of the respondents would encourage their daughter or a daughter of a close friend to attend Smith.

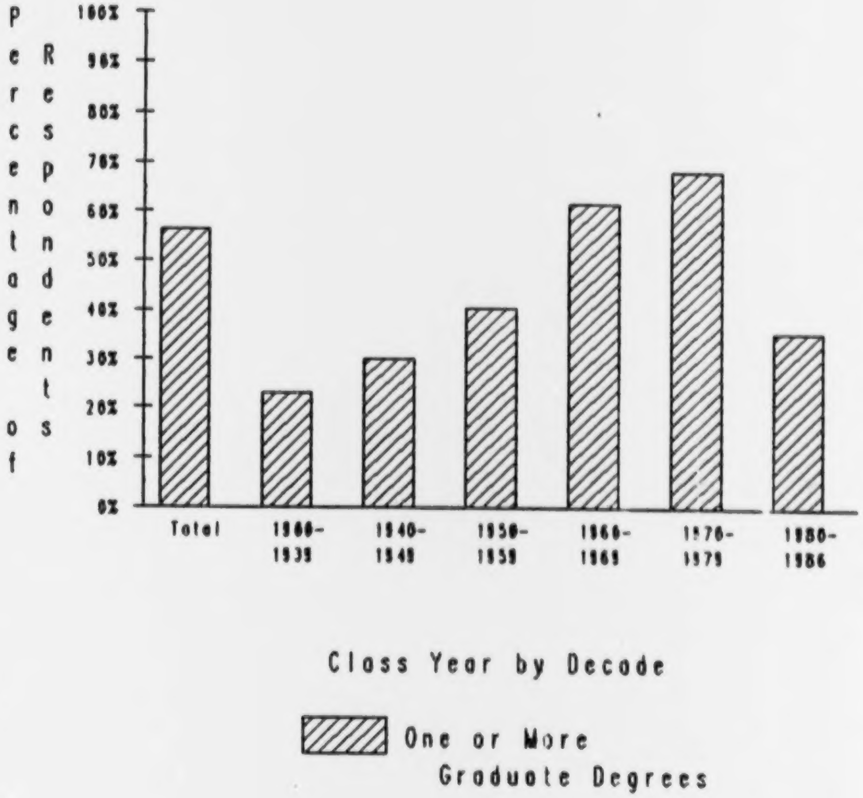
Strong alumni affiliation is vital for college planning, fund-raising and public relations. Alumnae Biography respondents have affirmed a strong affiliation to Smith College. Over 75 percent of all Alumnae Biography respondents (76.7%) are willing to advise students about their fields of work or study. Additionally, a willingness to participate on some level in the Minority Alumnae Network has been of particular interest to respondents from the class of 1980-1986, as 43.6 percent of those alumnae willing to participate in this network are from these classes. Participation in fund-raising activities is of interest to 20.1 percent of the Alumnae Biography respondents, and of those willing to participate in fund-raising, 37.0 percent are members of the classes of 1980-1986.

Involvement in alumnae organizations is key to strengthening alumnae affiliation. Respondents to the Senior Surveys from the graduating classes of 1985 through 1988 have responded that they are interested in joining various alumnae organizations. From the class of 1988, 76.4 percent of the respondents indicated that they are *very likely* to join the Alumnae Association of Smith College.

Graduate Education

Higher education institution "quality can be most readily communicated to students and to parents via high graduate/professional school admission rates" (COFHE, 1986). The number of graduate degrees received and the proportion of alumnae undertaking graduate education has increased greatly over time. Those alumnae with one or more graduate degrees has increased from 23.2 percent of the respondents from the classes of 1900-1939 and 30.4 percent of the 1940-1949 classes, to 68.5 percent of the classes of 1970-1979 (see Figure 1). The predominant type of graduate degree pursued is the Master's degree, other than the

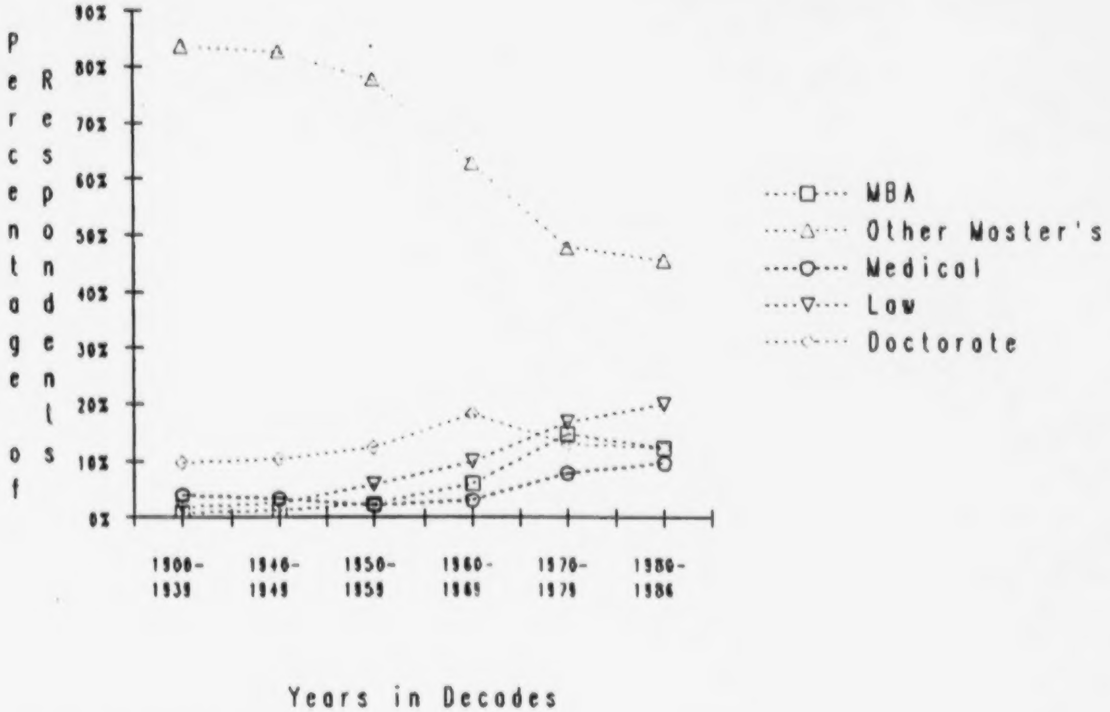
Master's of Business Administration degree. However, the proportion of Master's degrees recipients has declined over time (see Figure 2). Figure 2 also indicates that the attainment of all other types of graduate degrees has increased in frequency over time, with law degrees and doctorates showing the strongest increase.



Number of Graduate Degees of Alumnae Respondents
by Decade

Figure 1

A varied pattern in the number of years between college graduation and entrance into graduate study for those Biography respondents who have pursued graduate education has been revealed by examining groupings of class years by decade. The mean number of years between college graduation and entrance into graduate school for the classes of 1900-1949 is 12 years, while the mean number of years for the classes of 1960 1969 is 5 years.



Note: Doctorate includes Ph.D. and other Doctorate.

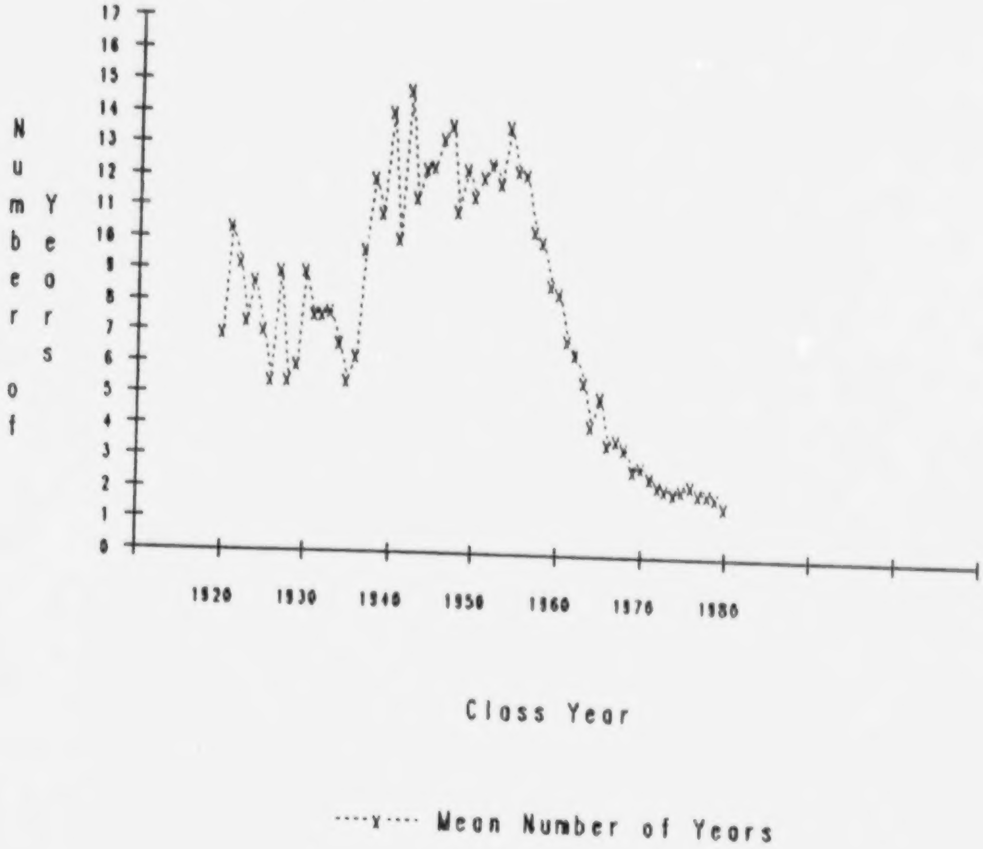
Type of Graduate Degrees by Decade
Current and Completed Degrees

Figure 2

Figure 3 displays this pattern in greater depth. An ongoing goal of our research is to further document this trend through updated information, substantiating the decrease found in the pattern of delayed entrance into graduate education programs.

Occupational Field Categories

Research into the occupational field categories of alumnae current and pre-retirement employment has indicated an increase of alumnae involved in careers in government and law, while the service of alumnae in the education field has shown a strong decline. The number of alumnae in the career of education decreases from 33.3 percent of the respondents from the classes 1900-1939 to 14.4 percent for those respondents reporting occupational information from the decade 1970-1979. The increase in the number of alumnae in the fields categorized as government and law rose from 3.4 percent from the classes of 1900-1939 to 16.2 percent of the respondents from the 1970-1979 classes, while 12.2 percent of the alumnae from the classes of 1980-1986 are employed in this field at a relatively early time in their careers (see Figure 4).



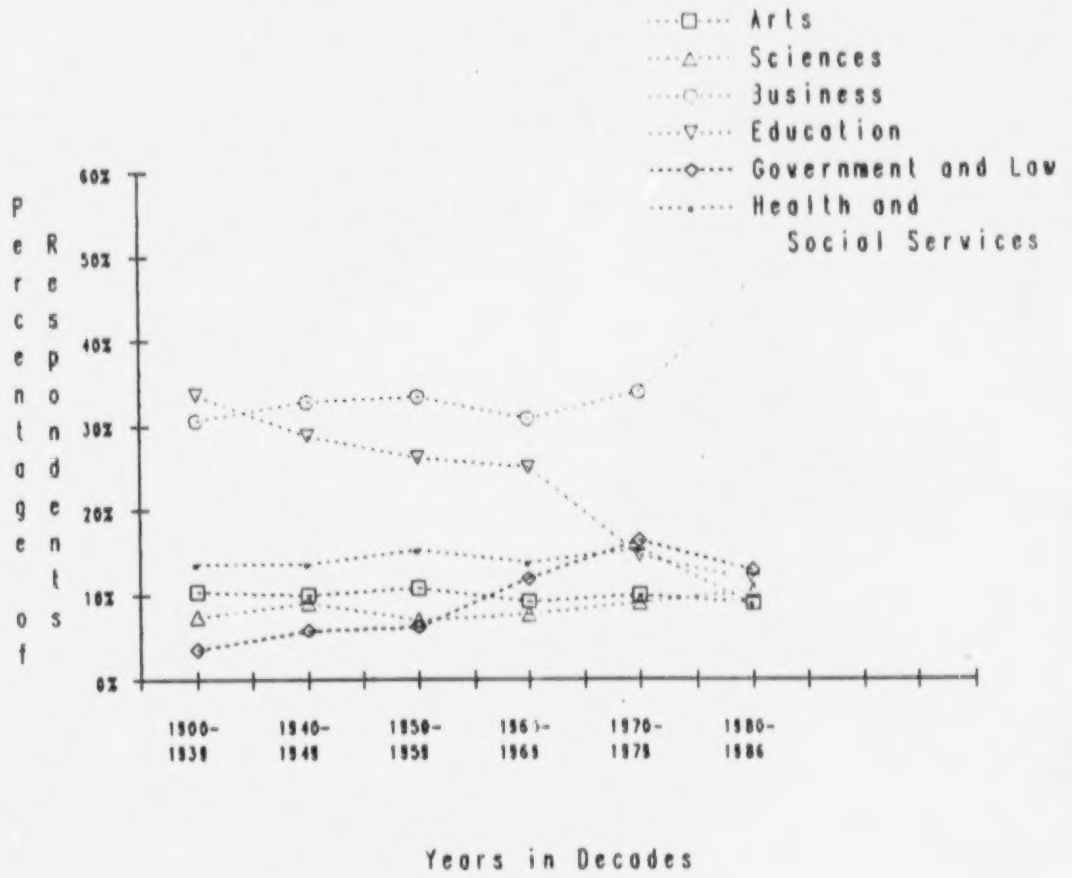
Note: The number of years represents the mean number of years between college graduation and entrance into graduate school, for those alumnae within each class who have graduate education.

Average Number of Years Prior to Entering Graduate School
By Class Year

Figure 3

Influences on Comparative Salary Categories

While The Profile of Women: Income, Security and Earnings (United States Bureau of Census, 1987) focuses primarily on discrepancies between males and females on various economic issues, a great deal of information can be gained by examining influences on comparative salary categories of female workers. Of those Alumnae Biography respondents who reported that they were employed full-time and disclosed their approximate salary category, 32.4 percent reported their salary as $15,000-$24,999 and 26.9 percent disclosed their salary as between $30,000-$49,999. When examining comparative salary categories there are many influences to be considered, such as marital status, age, and occupational field.

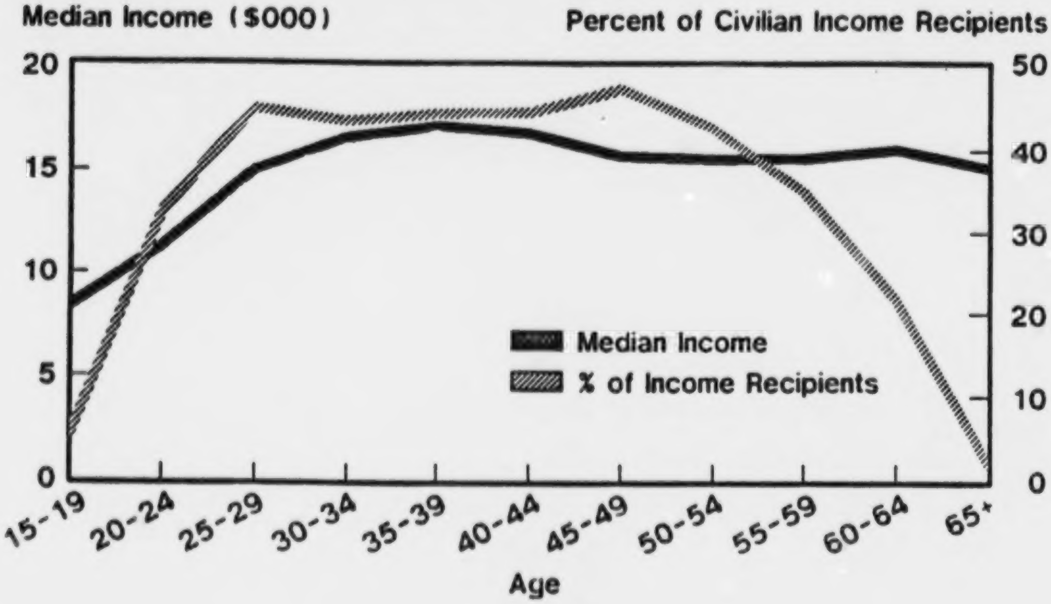


Occupational Field Categories by Decade
Current or Pre-Retirement Employment

Figure 4

Of those Alumnae Biography respondents from the classes of 1970-1979, 34.2 percent disclosed their salary category as between $30,000-$59,999, while 15.9 percent of the respondents from these classes reported an approximate salary category of $50,000-$99,999 dollars. If one assumes the traditional student model then respondents from the classes of 1970-1979 are between the ages of 29 - 40 years. The United

States Bureau of the Census (1987) reported that "the median income for women who worked year-round, full-time was highest for females 35 - 39 years old ($17,292)" (see Figure 5).



Female Year-Round, Full-Time Workers
by Age Group: 1984

United States Bureau of the Census (1986)

Figure 5

The earnings of women are also related to marital status. Of those Alumnae Biography respondents who stated that they were widowed, separated or divorced, 29.0 percent disclosed an approximate salary category of between $30,000 -$49,000. Also, of the 139 respondents who indicated a salary category as greater than 100,000 dollars, 94 alumnae (67.6%) reported that they were married or remarried, 20 respondents (14.4%) stated that they were either widowed, divorced, or separated, and 25 individuals (18.0%) reported their marital status either as single, or single and living with a partner.

Conclusions and Implications

The development of the Alumnae Biography databases has simultaneously provided an institutional database and a resource for research on this distinctive population of college educated women. Further, the process of such an undertaking has also provided a strong model for alumni research.

A major implication for college planning and fund-raising has been the growth in alumnae participating in occupational fields categorized as business. Also, a pattern of women college graduates delaying entrance into graduate school has been revealed, and is a trend that is expected to be further documented by Alumnae Biography research.

Smith College has an ongoing commitment to maintain and develop the Alumnae Biography databases, thus expanding the research potential provided through this entity. Currently, the availability of the data for honors theses is being explored, and faculty research on this data is encouraged and being undertaken with increasing frequency. Future Alumnae Biography research will encompass longitudinal analyses of the development and accomplishments of Smith alumnae and will continue to document such accomplishments over time. Moreover, the future development of the Alumnae Biography databases will enhance the capabilities of Institutional Research and Alumnae Biography to be proactive resources for the needs of the many user offices represented throughout the institution.

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The Development and Application of an Individually Tailored Alumni Follow-up System

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The techniques described in this document were developed in the course of an agreement between the U.S. Office of Education and the Rochester Institute of Technology.

Introduction

It is difficult to imagine a better marketing tool for a postsecondary school than empirical evidence of graduate success. In order to provide recruiters with this information, increasing numbers of postsecondary institutions have initiated alumni follow-up systems. The methods used vary somewhat, but usually a combination of mail and telephone surveys are employed. Information most often sought includes employment status, additional education, and satisfaction with the institution. Collection of this information allows recruiters to say, for example, that most alumni are employed as professionals, that they earn an average of $500 per week, and/or that 50 percent have attained graduate degrees. Such information is also valuable in dealing with external publics, such as funding sources, prospective employers of graduates, alumni groups, and accrediting agencies. These data are not only valuable, they are relatively inexpensive to collect.

Much less attention has been paid to the potential value of an alumni follow-up system to internal audiences. In recent years, however, the demand for such data among academic groups within the institution has increased, primarily due to accreditation requirements and the need for curriculum modifications. Resource limitations have made it difficult or impossible for offices of institutional research to adequately respond to these often quite numerous and varied requests. Because of limitations in human and financial resources, and because alumni should not be asked to respond to an endless stream of questionnaires, administering multiple surveys is frequently not an option that can be considered.

The purpose of this paper is to describe a methodology for developing and administering an individually tailored alumni follow-up instrument that is flexible enough to meet both the broader data needs of the institution and the specific information needs of departments. The technique, which uses relatively low-cost and generally available technology, was developed at the National Technical Institute for the Deaf at Rochester Institute of Technology (NTID at RIT). NTID has been involved in collecting data on alumni since 1978, and, prior to last year, the NTID alumni questionnaire generally asked all alumni the same questions. Data of this type were necessarily limited in their capacity to support program evaluation, curriculum development, and/or many kinds of specific policy decisions. The methodology described here makes it possible to address a wide variety of requests for data from many sources, while continuing to meet the ongoing data needs of the institution. Both categories of needs can be met with relative efficiency, and without conducting a multitude of separate surveys.

Procedures

A. Needs Assessment

Use of data by educational practitioners normally occurs in direct proportion to its relevance to their needs. An important part of the development of any survey, therefore, is the assessment of the data needs of potential users. As is the case with most institutional research offices, this office responds to requests for data from a rather broad spectrum of departments. It was necessary to take some pains to determine the needs of institutional decision makers as precisely as possible. Several steps were taken.

Results of the 1987 survey were tabulated, and a report was produced that was sent to all institutional academic managers and other upper and middle level administrators. Meetings were set up with all groups in order to present data summaries and solicit feedback. Decision makers were asked to provide frank critique of the instrument, by deleting or modifying existing questions as they saw fit, and/or by adding questions; academic department chairs were invited to provide questions that were specific to graduates of their major. This resulted in 13 questions that would be asked of all alumni, 33 additional questions of broad interest about a variety of behaviors (but which are neither of interest to the total institution nor characteristic dependent), and literally hundreds of program-specific items.

B. Questionnaire Construction

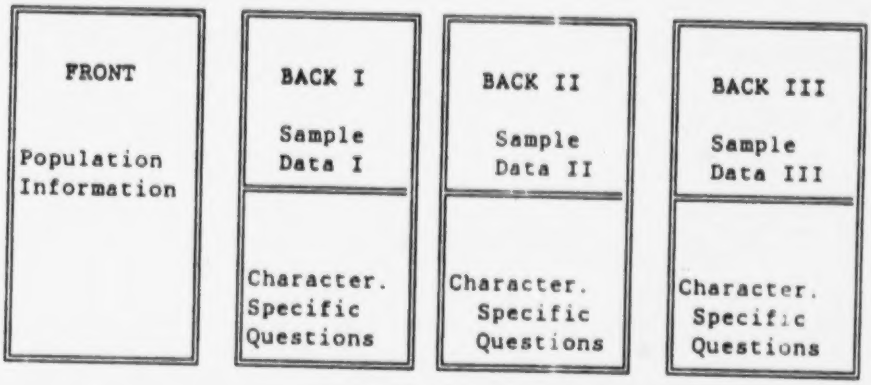
To address the needs of a variety of users, we thought it necessary to create a questionnaire that would be flexible enough to meet the needs of almost any request, given the limits of space (which we arbitrarily determined to be both sides of one legal-sized page). We determined that there were three basic types of information:

1. Information that is collected from *the entire population*. This is usually, but not always, the most important information, such as data that must be reported to funding sources regularly, or data that are used to insure that the institution as a whole is staying on meeting a critical goal. Examples might be graduate employment rate, the types of jobs found by alumni, and their earnings.

2. Information that can be collected from *a random sample of the population*. Sampling can be used to collect data that, while important, need not be collected on everyone. Examples might include additional education pursued by alumni, job satisfaction, and certain personal items such as marital status or club memberships.

3. *Characteristic-specific* data, which are collected on a group that is identified by some specific trait. Such traits include gender, age, race, and academic major.

After considerable debate and experimentation, the following format was determined to be best to meet our needs:



Some explanation is warranted. Information which we considered most important, and which we wanted to obtain on all alumni, occupied the front half of the survey. The back half of the survey was divided in halves. Three different upper halves were printed, each dealing with a different content area; each was sent to one-third of the graduates. The bottom part of the second page was characteristic-specific information. In our specific case, this method produced forty-five different questionnaires[1]. Samples of questionnaires are appended.

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[1] Fourteen different majors (our characteristic-specific criterion was academic major), each with three different top halves of the second page, and three more with the major-specific area left blank.

In the past, to send out questionnaires in this fashion would have meant a rather messy cut-and-paste job, and the use of many hours of clerical help. We managed to circumvent that inconvenience, however. The printing of forty-five *different* questionnaires, each of them personalized with the graduate's own name and address, was accomplished by using Wordperfect to construct the questionnaire by making each of the three pieces (front, top half of back, bottom half of back) *separate and distinct documents*[2], and using the merge function within Wordperfect to build all of the possible combinations. The questionnaires were printed on a Dichronics DIJET1 laser printer. Addresses for envelopes (and for questionnaires) were taken from another Wordperfect file; envelopes were printed on a Toshiba Pagelaser 12 laser printer. Envelopes and surveys were printed in precisely the same order.

Applications of the Methodology

A. An example: NTID at RIT

Many of the applications are probably readily apparent to most readers; perhaps it would be helpful to show what this methodology has allowed us to do at at our own institution. At NTID, this method allowed us to meet the data needs of both internal and external audiences. *Basic employment information* (labor force status, employment rate, occupation, earnings, etc.) was collected from all alumni. This is critical information for NTID. It provides an excellent overall picture of the accomplishment of one of our most important goals (to help graduates get good jobs), and is presented to Congress annually in support of our budget request.

The sampling sections (top half, rear) allowed the collection---from large random samples of alumni---of data on *job satisfaction, additional educational pursuits, and personal and social activities*. As noted previously, were we to collect data on all three areas in one questionnaire, the instrument would simply have been too long---another full page, in fact. Use of sampling enabled us to collect data in all three areas.

Applications of these data are numerous. Data on job satisfaction can be used by those faculty preparing alumni for the world of work; personal/social activities are often of much interest to professional counselors; and data on the nature of additional education pursued by alumni can be very useful to divisions of continuing education.

The *characteristic-specific* section allowed department chairs to ask questions such as the three listed below of their alumni:

•*What tasks or procedures do you do on your job? Check all that apply.*

_Coding _Abstracting _Chart Analysis _Chart Assembly _Admissions
_Release of information _Tumor Registry _Quality Assurance _Supervision
_PRO review _Insurance Claims _Other (specify)

•*What skills have you learned in the last year in on-the-job training?*
_Design _Code Analysis _Client Contact _Field Inspection _Graphic Presentation
_Spec Writing _Energy Audits _CAD _Other _None

---

[2] That is, the front was operationally treated as one questionnaire, the upper halves of the rear were treated as three separate and complete documents, and questions asked of graduates of particular majors were each treated separately as well.

*_What kinds of computer systems do you work on?_

_IBM _IBM compatible _DEC _CMS _VM _VMS
_MVS _UNIX _Other (specify)

The uses of such data in curriculum evaluation and development are obvious. Academic departments can revise curricula as necessary to teach skills that will be needed by graduates in real job situations.

B. Other Applications of Questionnaire Data

We have really only scratched the surface with regard to the applications of the system for questionnaire construction outlined here. Such a system can be used to ask some critical questions of all alumni, and, simultaneously, some different questions of younger and older graduates; men and women; minorities and non-minorities; or many other subgroups. The institutional research office can thus respond to the various and sundry data needs of both the institution as a whole and of many smaller groups of data users.

Conclusions

The purpose of this paper has been to describe a methodology that can be applied almost anywhere, using relatively inexpensive existing technologies, and that allows the institutional researcher to address a broad spectrum of institutional needs. Wordperfect permits the construction of questionnaires to include items of both college-wide interest and of interest to a large number of data users with much more specific interests.

Equally important, it can do so in a relatively cost-efficient way; questionnaires need not be several pages long, and multiple surveys are not necessary. Therefore, neither alumni nor institutional researchers are overtaxed. We believe that this system maximizes the potential for gathering data that is of the most use to the institution, while keeping resource expenditure quite reasonable..

APPENDIX: ALUMNI FEEDBACK QUESTIONNAIRES

1988 NTID ALUMNI FEEDBACK QUESTIONNAIRE

National Technical Institute for the Deaf at
Rochester Institute of Technology

Dear Jacqueline:

We want to know what you are doing now. This information can help us improve our programs at NTID/RIT. We promise we will *NOT* use your name or address when we talk or write about the information you gave us. Your name will stay private.

I agree to help with this project if I sign my name.

X____________________________________

---

1. If the address below is wrong, please make the necessary corrections.

784-92-8436
Jacqueline Bossen
409 West Second Street
Denver, CO 80236

2. Do you have a job? ☐ yes (GO TO QUESTION 3) ☐ no (GO TO QUESTION 11)

ANSWER THESE QUESTIONS ONLY IF YOU HAVE A JOB NOW
(you answered yes to question 2)

3. What is your job title (name of your job)? ________________________

4. What do you do on your job? (for example: typing and filing, computer programming, drafting, etc.)

____

5. What is the name of your company? ____________________________

6. What kind of company is it? (for example: a hospital, a manufacturer of airplane parts, a school, etc.)

____

7. Before taxes and other subtractions (social security, health insurance, etc.) how much money do you make in every paycheck?

$_____ ___

8. How often do you usually get paid?

☐ Every Week	☐ Every Two Weeks	☐ Two Times a Month
☐ One Time a Month	☐ Other (explain) ____________________	

9. How many other deaf workers are there in your department? ________________

10. Show if you have the following support services on the job

TDD	Amplified Telephone	Interpreter
☐ Available	☐ Available	☐ Available
☐ Needed	☐ Needed	☐ Needed
☐ Not Needed	☐ Not Needed	☐ Not Needed

GO TO QUESTION 13

ANSWER THIS QUESTION ONLY IF YOU DO NOT HAVE A JOB NOW
(you answered no to question 2)

11. Have you looked for a job in the last two weeks? ☐ yes ☐ no

12. If you have NOT looked for a job, why have you not looked?

☐ I am in school ☐ I must take care of my home ☐ I am too sick to work
☐ Employers are not hiring deaf people now ☐ Employers are not hiring anyone right now
☐ Other (please explain) ________________________________

GO TO QUESTION 13

13. Do you get any money from:

Social Security Income (SSI)	☐ yes	☐ no
Social Security Disability Benefits (SSDI)	☐ yes	☐ no
Vocational Rehabilitation (VR, OR, OVR, DVR)	☐ yes	☐ no
Welfare	☐ yes	☐ no

14. Do you own your own land, home, or some other building? ☐ yes ☐ no

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Directions:

The questions below ask about your communication skills. For each question show how you feel by marking the six statements.

for example: **The Weather**

Unimportant	X			Important
Good			X	Bad
Difficult		X		Easy
Fast			X	Slow
Weak		X		Strong
Large	X			Small

15. **My Job**

Unimportant	☐	☐	☐	Important
Good	☐	☐	☐	Bad
Difficult	☐	☐	☐	Easy
Fast	☐	☐	☐	Slow
Weak	☐	☐	☐	Strong
Large	☐	☐	☐	Small

16. **My Salary**

Unimportant	☐	☐	☐	Important
Good	☐	☐	☐	Bad
Difficult	☐	☐	☐	Easy
Fast	☐	☐	☐	Slow
Weak	☐	☐	☐	Strong
Large	☐	☐	☐	Small

17. **My Supervisor**

Unimportant	☐	☐	☐	Important
Good	☐	☐	☐	Bad
Difficult	☐	☐	☐	Easy
Fast	☐	☐	☐	Slow
Weak	☐	☐	☐	Strong
Large	☐	☐	☐	Small

18. **My Co-workers**

Unimportant	☐	☐	☐	Important
Good	☐	☐	☐	Bad
Difficult	☐	☐	☐	Easy
Fast	☐	☐	☐	Slow
Weak	☐	☐	☐	Strong
Large	☐	☐	☐	Small

19. **My chances of being promoted**

Unimportant	☐	☐	☐	Important
Good	☐	☐	☐	Bad
Difficult	☐	☐	☐	Easy
Fast	☐	☐	☐	Slow
Weak	☐	☐	☐	Strong
Large	☐	☐	☐	Small

20. **My company's understanding of deaf people**

Unimportant	☐	☐	☐	Important
Good	☐	☐	☐	Bad
Difficult	☐	☐	☐	Easy
Fast	☐	☐	☐	Slow
Weak	☐	☐	☐	Strong
Large	☐	☐	☐	Small

21. What year did you begin the job you have now? 19____

22. Have you received a promotion from your company? ☐ Yes ☐ No

23. Has your employer given you more responsibility since you started work? ☐ Yes ☐ No

24. Five years from now, would you like to have the same job? ☐ Yes ☐ No

25. If you were to change anything about your job, what would you change?

____

26. What tasks or procedures do you do on your job? (Check all that apply to you)

- ☐ Coding
- ☐ Abstracting
- ☐ Chart analysis
- ☐ Chart assembly
- ☐ Admissions
- ☐ Release of information
- ☐ DRG coordinator
- ☐ Tumor registry
- ☐ Quality assurance
- ☐ Utilization management
- ☐ Supervision (Supervisor)
- ☐ Management (Director)
- ☐ PRO reviewer
- ☐ Insurance claims

27. What skills have you learned in the last year in on-the-job-training? (Check all that apply to you)

- ☐ Coding update (ICD-9-CM)
- ☐ Coding (CPT-4)
- ☐ Abstracting update (computerized)
- ☐ A/P reviews
- ☐ Utilization management procedures
- ☐ Release of information
- ☐ PRO review procedures
- ☐ Regulatory requirements for data
- ☐ Computerized coding
- ☐ Quality assurance procedures
- ☐ Medical terminology update
- ☐ PPS
- ☐ DRG
- ☐ Other
- ☐ None

28. What kinds of educational activities have you participated in during the last year? (Check all that apply to you)

- ☐ In-service educational programs
- ☐ AMRA annual meeting
- ☐ College/university courses
- ☐ School or college courses in coding
- ☐ School or college courses in A/P
- ☐ Legal courses
- ☐ Certification Examination Review
- ☐ None
- ☐ Local professional business and education meeting
- ☐ State professional business and education meeting
- ☐ School or college courses in quality assurance
- ☐ School or college courses in medical terminology
- ☐ School or college courses in pathophysiology
- ☐ School or college courses in management or supervision
- ☐ Other

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1988 NTID ALUMNI FEEDBACK QUESTIONNAIRE

National Technical Institute for the Deaf at
Rochester Institute of Technology

Dear Laura:

We want to know what you are doing now. This information can help us improve our programs at NTID/RIT. We promise we will *NOT* use your name or address when we talk or write about the information you gave us. Your name will stay private.

I agree to help with this project if I sign my name.

X______________________________

---

1. If the address below is wrong, please make the necessary corrections

309-61-0994
Laura English
301 Main Street
Ellicott City, MD 21043

2. Do you have a job? ☐ yes (GO TO QUESTION 3) ☐ no (GO TO QUESTION 11)

ANSWER THESE QUESTIONS ONLY IF YOU HAVE A JOB NOW
(you answered yes to question 2)

3. What is your job title (name of your job)? ______________________

4. What do you do on your job? (for example: typing and filing, computer programming, drafting, etc.)
____

5. What is the name of your company? ______________________

6. What kind of company is it? (for example: a hospital, a manufacturer of airplane parts, a school, etc.)
____

7. Before taxes and other subtractions (social security, health insurance, etc.) how much money do you make in every paycheck?
$_____ ___

8. How often do you usually get paid?

☐ Every Week
☐ One Time a Month
☐ Every Two Weeks
☐ Other (explain) ______________________
☐ Two Times a Month

9. How many other deaf workers are there in your department? ______________

10. Show if you have the following support services on the job

TDD	Amplified Telephone	Interpreter
☐ Available	☐ Available	☐ Available
☐ Needed	☐ Needed	☐ Needed
☐ Not Needed	☐ Not Needed	☐ Not Needed

GO TO QUESTION 13

ANSWER THIS QUESTION ONLY IF YOU DO NOT HAVE A JOB NOW
(you answered no to question 2)

11. Have you looked for a job in the last two weeks? ☐ yes ☐ no

12. If you have NOT looked for a job, why have you not looked?

☐ I am in school
☐ Employers are not hiring deaf people now
☐ Other (please explain) ______________________
☐ I must take care of my home
☐ Employers are not hiring anyone right now
☐ I am too sick to work

GO TO QUESTION 13

13. Do you get any money from:

Social Security Income (SSI)	☐ yes	☐ no
Social Security Disability Benefits (SSDI)	☐ yes	☐ no
Vocational Rehabilitation (VR, OR, OVR, DVR)	☐ yes	☐ no
Welfare	☐ yes	☐ no

14. Do you own your own land, home, or some other building? ☐ yes ☐ no

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15. What is your Marital Status?

☐ Never Married ☐ Married

☐ Separated ☐ Divorced ☐ Widowed

16. FOR MARRIED GRADUATES ONLY, is your spouse ☐ Hearing ☐ Deaf

17. How many children do you have? ____

18. FOR THOSE WHO ARE WORKING, are most of your friends at work

☐ Deaf ☐ Hearing ☐ Both ☐ I prefer not to socialize with co-workers

19. Do you belong to any clubs or organizations? ☐ Yes ☐ No

20. What are the names of the clubs? ______________ ______________________________

21. FOR THOSE WHO ARE IN CLUBS, are they clubs for

☐ Deaf people only ☐ Deaf and hearing people

22. Are you an officer in any of these clubs (for example: President, Treasurer, etc.)? ☐ Yes ☐ No

23. How often do you go out for a good time (movies, dinner, dancing, ball games, etc.)?

☐ Once or more a week ☐ Once or twice a month

☐ Only a few times a year ☐ I never go out

24. When you do go out, do you prefer to have other deaf people or hearing people go with you?

☐ Usually other deaf people ☐ Usually hearing people ☐ It doesn't really matter

25. Do you vote?

☐ Yes, in all elections ☐ Yes, sometimes ☐ I never vote

26. What tasks or procedures do you do on your job? (Check all that apply to you)

☐ Coding
☐ Abstracting
☐ Chart analysis
☐ Chart assembly
☐ Admissions
☐ Release of information
☐ DRG coordinator
☐ Tumor registry
☐ Quality assurance
☐ Utilization management
☐ Supervision (Supervisor)
☐ Management (Director)
☐ PRO reviewer
☐ Insurance claims

27. What skills have you learned in the last year in on-the-job-training? (Check all that apply to you)

☐ Coding update (ICD-9-CM)
☐ Coding (CPT-4)
☐ Abstracting update (computerized)
☐ A/P reviews
☐ Utilization management procedures
☐ Release of information
☐ PRO review procedures
☐ Regulatory requirements for data
☐ Computerized coding
☐ Quality assurance procedures
☐ Medical terminology update
☐ PPS
☐ DRG
☐ Other
☐ None

28. What kinds of educational activities have you participated in during the last year? (Check all that apply to you)

☐ In-service educational programs
☐ AMRA annual meeting
☐ College/university courses
☐ School or college courses in coding
☐ School or college courses in A/P
☐ Legal courses
☐ Certification Examination Review
☐ None
☐ Local professional business and education meeting
☐ State professional business and education meeting
☐ School or college courses in quality assurance
☐ School or college courses in medical terminology
☐ School or college courses in pathophysiology
☐ School or college courses in management or supervision
☐ Other

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1988 NTID ALUMNI FEEDBACK QUESTIONNAIRE

National Technical Institute for the Deaf at
Rochester Institute of Technology

Dear Deborah:

We want to know what you are doing now. This information can help us improve our programs at NTID/RIT. We promise we will *NOT* use your name or address when we talk or write about the information you gave us. Your name will stay private.

I agree to help with this project if I sign my name

X____________________________________

---

1 If the address below is wrong, please make the necessary corrections

432-68-2880
Deborah Kaplan
37 Square Trail
West Bend, OH 44132

2 Do you have a job? ☐ yes (GO TO QUESTION 3) ☐ no (GO TO QUESTION 11)

ANSWER THESE QUESTIONS ONLY IF YOU HAVE A JOB NOW
(you answered yes to question 2)

3 What is your job title (name of your job)? __________ ________ ________

4 What do you do on your job? (for example: typing and filing, computer programming, drafting, etc.)

____

5 What is the name of your company? ______________________________

6 What kind of company is it? (for example: a hospital, a manufacturer of airplane parts, a school, etc.)

____

7 Before taxes and other subtractions (social security, health insurance, etc.), how much money do you make in every paycheck?

$_____ . ___

8 How often do you usually get paid?

☐ Every Week ☐ Every Two Weeks ☐ Two Times a Month
☐ One Time a Month ☐ Other (explain) ____________________

9 How many other deaf workers are there in your department? _______________

10 Show if you have the following support services on the job

TDD	Amplified Telephone	Interpreter
☐ Available	☐ Available	☐ Available
☐ Needed	☐ Needed	☐ Needed
☐ Not Needed	☐ Not Needed	☐ Not Needed

GO TO QUESTION 13

ANSWER THIS QUESTION ONLY IF YOU DO NOT HAVE A JOB NOW
(you answered no to question 2)

11 Have you looked for a job in the last two weeks? ☐ yes ☐ no

12 If you have NOT looked for a job, why have you not looked?

☐ I am in school ☐ I must take care of my home ☐ I am too sick to work
☐ Employers are not hiring deaf people now ☐ Employers are not hiring anyone right now
☐ Other (please explain) ______________________________

GO TO QUESTION 13

13 Do you get any money from:

Social Security Income (SSI)	☐ yes	☐ no
Social Security Disability Benefits (SSDI)	☐ yes	☐ no
Vocational Rehabilitation (VR, OR, OVR, DVR)	☐ yes	☐ no
Welfare	☐ yes	☐ no

14 Do you own your own land, home, or some other building? ☐ yes ☐ no

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15. During 1987 have you had

☐ On-the-job training for general orientation
☐ On-the-job training to get new skills
☐ Correspondence courses
☐ No education in 1987
☐ College courses for a degree
☐ Continuing or adult education
☐ other (explain) ____________

16. Did you attend any professional meetings or workshops last year? ☐ Yes ☐ No

If YES, which ones? ______________________________

17. Do you read professional or trade journals? ☐ Yes ☐ No

If YES, which ones? ______________________________

18. What is the highest degree you have already earned? ☐ Certificate ☐ Diploma ☐ Associate ☐ Bachelor ☐ Master ☐ Doctor or Law

19. What is the name of the school you received the degree from? ____________

20. What did you study? (your major or specialty area) ____________

21. Are you in school now? ☐ Yes ☐ No

(IF NO, PLEASE GO TO QUESTION 26)

22. What is the name of the school you are in? ____________

23. Are you: ☐ A full-time student ☐ A part-time student

24. What are you studying? (your major or specialty area) ____________

25. Why are you in school now? (Check ALL that are true for you)

☐ To get a higher degree
☐ To get a promotion
☐ To improve my skills for my job
☐ To improve my communication skills
☐ For personal interest (for example, a hobby, such as woodworking or photography)
☐ Other (Please explain) ______________________________

26. What software packages do you use?

____

____

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THE IMPACT OF SPECIAL COUNSELING & ACADEMIC SERVICES ON DISADVANTAGED STUDENTS

Marion Walker
Assistant for Educational Research
Corning Community College
Corning, New York

INTRODUCTION

Background

In 1984 Corning Community College received a Title IV grant to provide special counseling and academic services to 235 disadvantaged students. The definition for "disadvantaged" was that they were to be first generation college students, i.e. neither parents had college degrees; economically disadvantaged; and/or disabled and needing assistance; high school average <=80, non-grad or GED.

The Project's goal was to reach the same academic, retention and graduation rates for the 235 disadvantaged students as exist for the overall college population.

The Project's staff consists of the director, a reading/writing specialist, a math specialist, a counselor, a research assistant, an assistant for assessment and remediation testing, and a secretary. Title IV funded 70% and the college funded the other 30% of the cost of the program.

The director and the students signed an agreement whereby Special Services agreed to provide them with supportive services, and promised to be available for discussion of the program at any time. In return the students promised to do their best to maintain adequate academic standards in keeping with the college's requirements. The students were expected to complete the required learning skills courses, have acquired all the financial aid that was available to them, and have attended an exit interview with a Special Services counselor, or the director, in the event that they decided to withdraw from the college.

The students also gave permission to Special Services to keep records of their transcripts and the financial aid received, and gave permission to consult with other college professionals about their progress. The students were required to have weekly counseling if they began to have problems, and must have kept appointments with a tutor if one were assigned to them.

Purpose

The purpose of the research on the project was to measure the outcome of the special counseling services to the students. The results of which were for the benefit of those implementing the project, and to provide data for the necessary reports to the funding agency.

METHOD

A Longitudinal Study from Fall 1984 to Summer 1988

The criteria used in choosing the groups to study for comparison purposes were as follows:

Special Services Group (SSG)

The grant called for 235 students to be enrolled in the program each semester. These were chosen from students who were already in attendance at the college, as well as first time entering students. For the purpose of the study an initial cohort of 94 students who entered both Corning Community College and the Special Services Project in the Fall of 1984 was chosen.

Control Group (CG)

A Control Group of 83 eligible new entering students who were invited to participate in the project, but chose not to avail themselves of the services, was selected. These students' English and math placement scores were approximately the same as the SSG and had the same ratio of males to females. Their average age, however, was lower than the SSG, 22.27 for the CG vs 26.84 for the SSG. The average age for the overall college is 27. It was found that the placement scores of the 18 and 19 years old were no different than the older students. However, historically older students are apt to be more motivated than younger students. This was the only choice available for a control group at that time.

Overall College Group (OCG)

All 1075 of the 1974 new entering full and part-time students were selected.

The students were tracked from Fall 1984 to Summer 1988 using the college's 1022 data base management system, (a powerful system designed by CompuServe Data Technologies and compatible with the college's DEC 2060 mainframe computer). All the necessary information, i.e. withdrawals, GPA's, graduates, math and English grades, placement test scores etc. were drawn from the Registrar's data base. Some of the data were dumped into a PC which supports the SPSS statistical package, and Graphics package, MicroSoft Chart.

Comparisons were made between the groups on retention, graduation, GPA, math and English grades, (both college level and remedial). Chi Squares were used to test the differences of retention and success rates amongst the three cohorts. Also, t-tests were used to test the differences between the three group's GPA's.

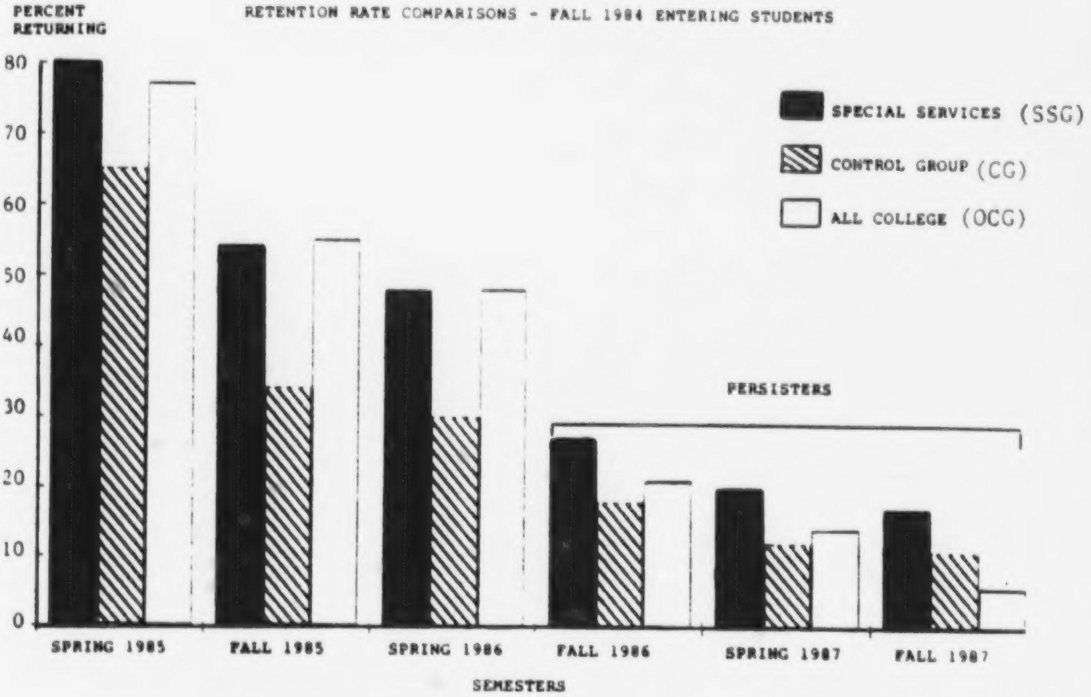
RESULTS

As can be seen in Fig.1, the SSG showed a higher retention rate than the CG and as high or, in some semesters, higher than the OCG. Chi Squares conducted at the sixth semester on retention there was a significant (χ^2= 10.11, p <.005, 1 df.) difference between SSG and CG. The differences were still significant after the 7th semester,(χ^2 = 9.74, p <.005, 1 df).

At the end of Spring 1988 the retention rates between SSG and OCG were almost the same, (54% of the SSG, and 55% of the OCG had left the college). This more than reached the stated goals of the project on retention.

FIG.1

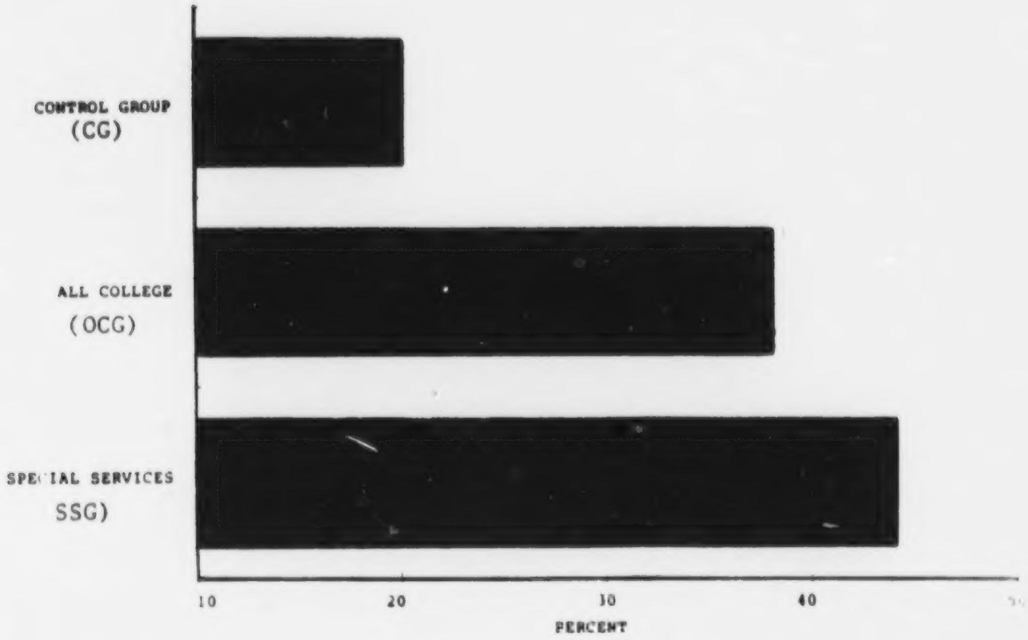
RETENTION RATE COMPARISONS - FALL 1984 ENTERING STUDENTS



The SSG's graduation rate after seven semesters was 24% higher than the CG, and 5% higher than the OCG (See Fig.2). The differences between the SSG and CG were highly significant (χ^2= 9.52, p <.005, 1 df). Here again, the SSG graduation results reached the goals of the project.

FIG.2

GRADUATION RATES OF FALL 1984 ENTERING STUDENTS
BY SPRING 1988



As can be seen in Fig.3, the SSG had higher GPA's than the CG each semester, although they were not statistically significant until the 5th semester(t = 2.21, p <.05). Until the 5th semester there was also a statistically significant difference between the SSG and the OCG with the OCG GPA's being higher. At the 5th semester the ones who persisted had GPA's equal to or higher than the OCG.

Fig.4 shows the percent of each group reaching a GPA of 2.0 or higher by the end of the second semester. The 24% difference between the CG and OCG was highly significant with a Chi Square of

FIG.3

END OF SEMESTER GPA COMPARISONS

FALL 1984 ENTERING STUDENTS

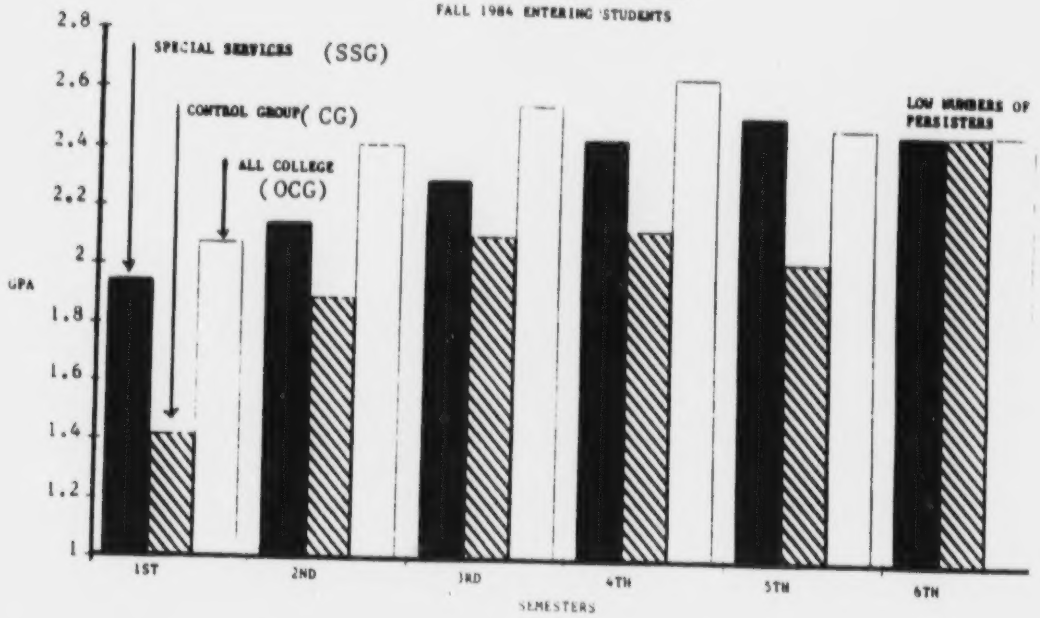
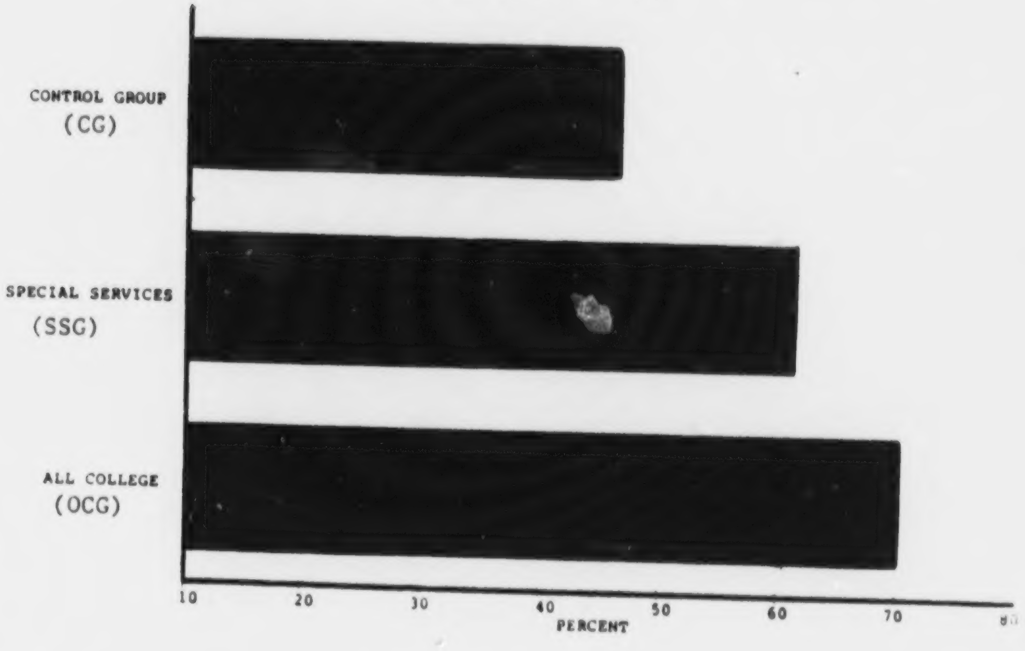


FIG.4

1984 ENTERING STUDENTS WHO EARNED A GPA OF 2.0 OR HIGHER BY END OF SECOND SEMESTER



13.09, $p < .005$, df.1. The SSG showed 15% more students with GPA's of 2.0 and higher than did the CG students but this was not significant, (χ^2 = 2.65).

While the percent of OCG students with GPA's of 2.0 or more was higher than the SSG by 9%, the difference was not significant, Chi Square 2.653. The academic results tend to indicate that Special Services had reached their goals.

Fig.5 presents the percent of students who passed the Basic Writing course for each group. Basic Writing is a pre-college course designed to bring students' English skills up to college level, and does not count towards degree credits. The differences in success rates between each of the groups were not significant. However, in comparing those who took college level English courses (Fig.6), CG with SSG, the differences were significant at .05 level (χ^2 = 4.777, df 1). The difference between SSG and OCG of 7%, with OCG percentage being higher, did not quite reach the 3.841 level of significance. (χ^2 = 3.777).

Looking at the success rates of the Elementary Algebra course (Fig.7), the differences between the groups were not significant, but again when the SSG took the college level math courses (Fig.8) we find that they performed significantly better than the control group, (χ^2 = 9.311, df. 1). The SSG grades were almost equal to the OCG in success rates. The above results indicate that the SSG who took remedial English and math were prepared for college level courses.

FIG.5
REMEDIAL ENGLISH (BASIC WRITING)
THOSE ACHIEVING GRADES OF "D" OR HIGHER

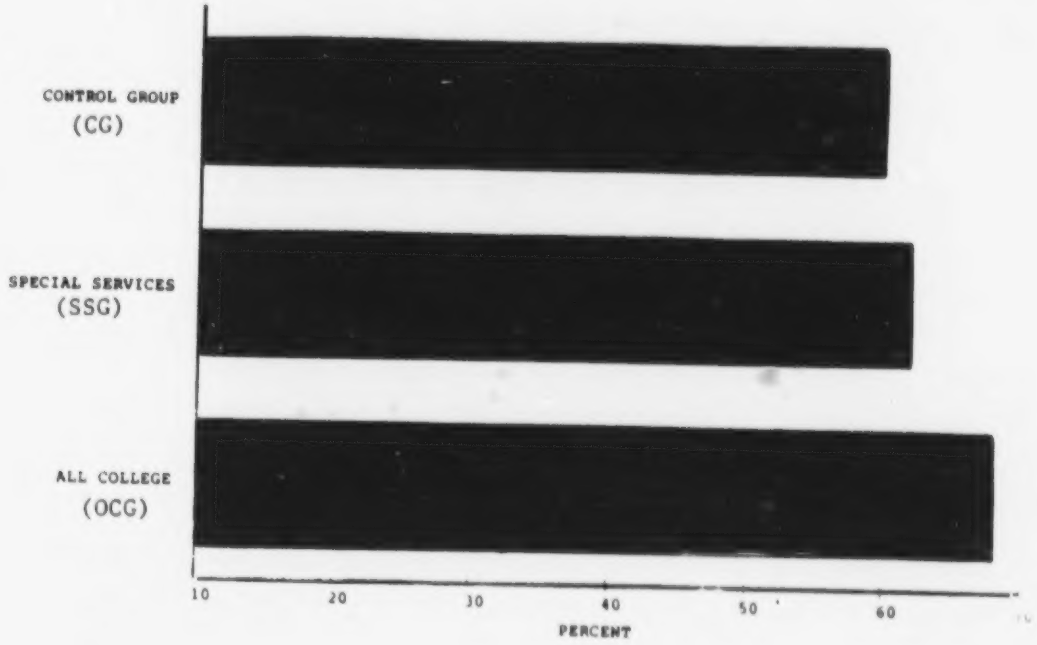


FIG.6
COLLEGE LEVEL ENGLISH
THOSE ACHIEVING GRADES OF "D" OR HIGHER

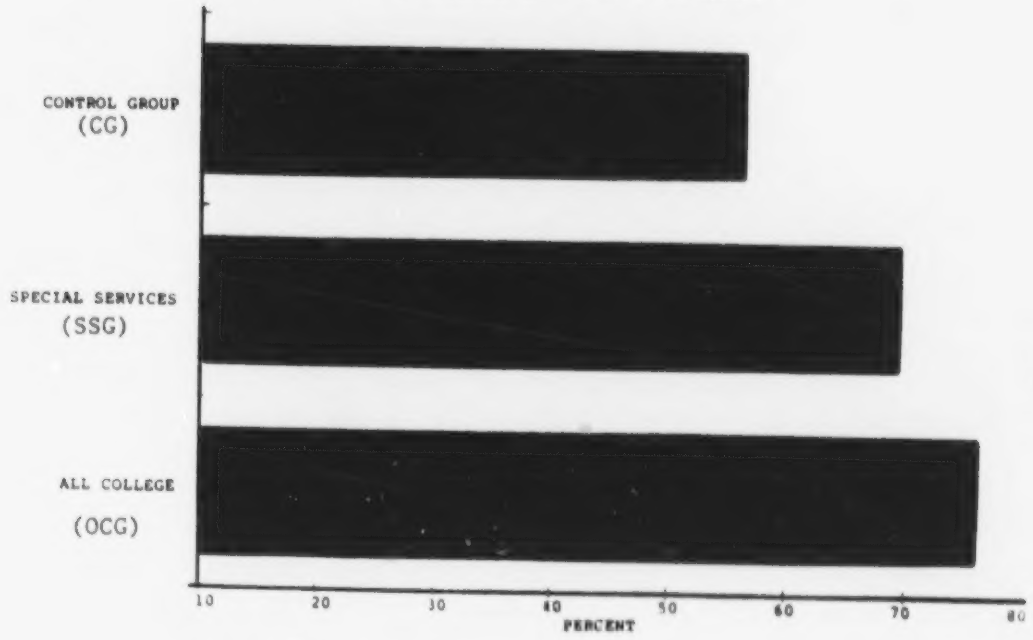


FIG.7

ELEMENTARY ALGEBRA (MA100)

THOSE ACHIEVING GRADES OF "D" OR HIGHER

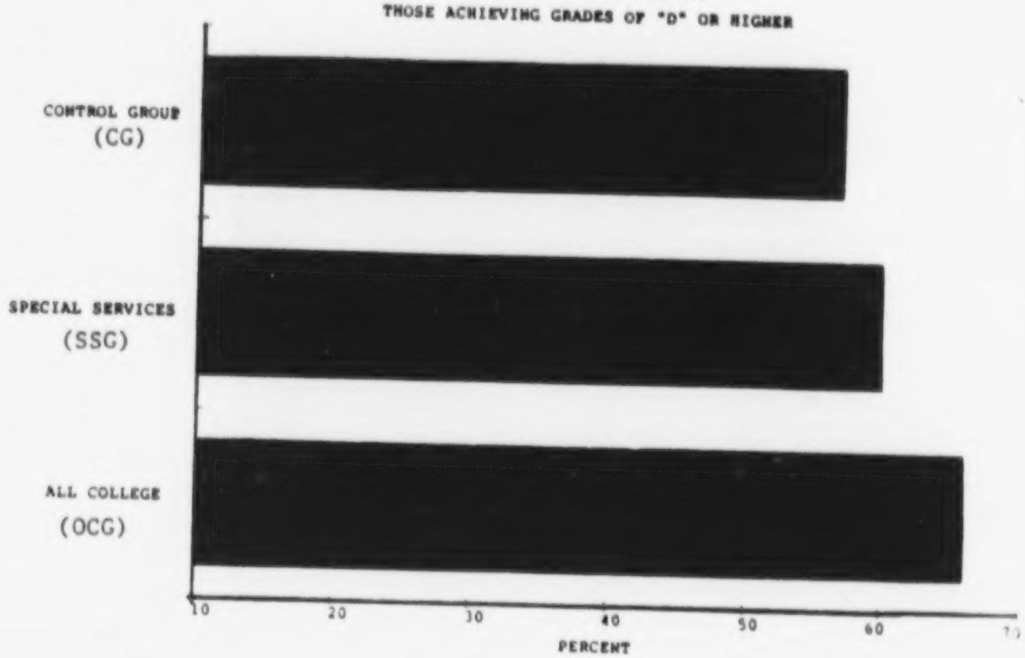
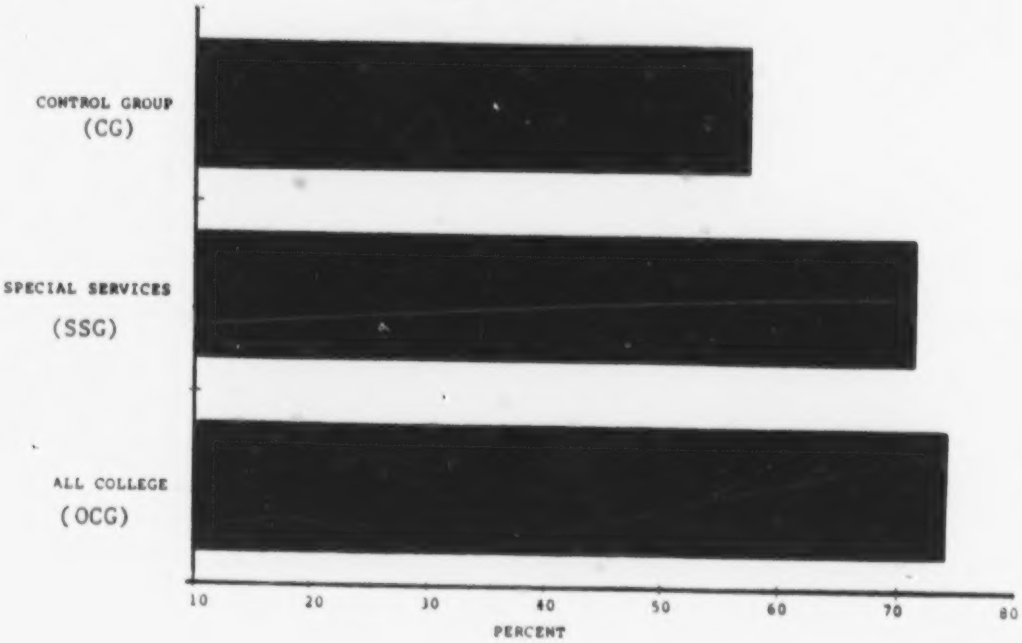


FIG.8

COLLEGE LEVEL MATH COURSES

THOSE ACHIEVING GRADES OF "D" OR HIGHER



DISCUSSION

It is evident from the results that the Special Services Group (SSG) showed more persistance than both the Overall College Group (OCG) and the Control Group (CG), and were equally as academically successfull as the Overall College Group. The graduation rate was significantly higher than the Control Group and, also higher than the Overall College Group.

Students who entered the program in succeeding semesters are also being tracked in the same manner as the Fall 1984 groups. The complete results of these data are too much to include in this report. It is sufficient to say that the results appear to be very similar up to this point in time. There is evidence of a slight slippage in some of the rates. However, when checking the results of placement tests each semester, we find a much greater percentage of students being placed in remedial courses than before. The percentage of entering students who have to be recommended for remedial courses has increased from 26% in 1984 to 38% in 1987. This might account for some of the slippage.

A new control group has been selected for Fall 1987. At that time there were students waiting to get into the program, so in the Fall 1987 study these students are the new control group. It could be said that because the original control group had chosen not to be in the program, they may not have been as motivated as those who did choose to be in it, especially as this group had more 18 & 19 year old students than SSG.

However, the majority of the evidence to date would seem to indicate that the services provided have had a positive impact on the students in the project. Comments from the students who were asked to evaluate their counselors and the program have shown a high degree of satisfaction, and many felt they could not have stayed in school without the help of the project. They were impressed with the caring and concern the counselors had for the students. One student went so far as to write a poem praising the "Very special" Special Services Project.

With community colleges enrolling more and more disadvantaged and disabled students, this kind of service is becoming a must.

It is worth noting that success at a community college is measured somewhat differently than at a four-year institution. Some students come to upgrade their skills for a job, some don't intend to graduate first, so transfer to 4-year institutions lacking a few credits. Fifty-three percent of our 1987 credit course students were over twenty-one years old. Many of these are married and have full or part-time jobs causing them to take longer to complete their studies.

The project has received a Certificate of Recognition by the New York State Office of Vocational Rehabilitation, and has been funded for another three years.

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ASSESSMENT OF FRESHMEN WRITING SKILLS: FACULTY CONCERNS AND THE PRINCIPLES OF MEASUREMENT

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This paper documents the development of an assessment program designed to assign students to either pre college or college level writing classes at a suburban campus of a major state university. In particular, the efficiency, reliability, validity and faculty acceptance of several measures were examined. Research provided the data necessary for faculty and administration acceptance of a two stage assessment scheme in which both essay and multiple choice measures were employed. Described herein are the institutional studies on which the program was based. These studies provoked confidence as to the accuracy and effectiveness of decisions based on placement program results.

The assessment of writing skills has sustained a controversy in both higher education and measurement research (Follman and Anderson, 1967; Breland and Gaynor, 1979; Breland et al, 1987). Unlike other disciplines, it is feasible to measure writing skills via each of two methods of assessment. In particular, college administrators interested in screening freshmen for English class placement may select either an essay or multiple choice format. College administrators interested in an effective and affordable assessment program sought guidance from writing class practitioners and measurement experts. In so doing the crux of the controversy became apparent.

The essay provides a direct assessment of a students' writing skills. Those who teach writing perceive the contiguity between writing in a classroom setting and writing on the essay exam as a major asset. Psychometricians, looking beyond the test format accept the high face validity of the essay but have demonstrated the relatively low reliability of the single essay (Breland et al 1987). Further compounding the situation are economic limitations which may conflict with the use or expansive measures or the need to use multiple measures.

By definition, low reliability severely limits the predictive validity of a measure (Nunally,1964) and therefore causes serious concern when using essay scores for placement. Multiple choice exams, which purport superior reliability and validity indices, relative to the essay, are met with destain by English faculty. English professors fault the multiple choice test as an indirect measure of writing; it is perceived as a test of reading skills or at best grammar and syntax. The charge of the college administration is to deal with the concerns of each group while developing an assessment program which best serves the student and the college by facilitating accurate and efficient placement decisions.

Development of the Program - The Pilot Stage

Driven by faculty concerns for the quality of students entering freshmen writing classes, an essay exam was pilot administered to over 2000 entering freshmen in the Fall of 1986. English faculty members, trained in holistic scoring, served as raters. Each essay was scored by two raters on a one to four scale. Administrators, cautious as to the accuracy of the exam and its impact on students prohibited placement based on scores during the pilot year.

Reliability - The Pilot Stage

Initial faculty review of the exam data yielded claims of success and demands for placement based on test results. These reports were based on the operational feasibility the program and the contiguous agreement achieved between each of the two ratings on approximately 90 percent of the essays. Although impressive at first glance, contiguity of ratings is misleading. In fact on a four point scale the chance of getting two scores that were at least contiguous is over 62 percent. However the actual reliability approximates .4. Barely acknowledging a limitation, faculty remained supportive of the essay mode of placement testing. An empirical study was designed to gather more pertinent and persuasive data.

Validity - Pilot Stage

A criterion other than class grades was sought against which essay scores could be compared. In so doing, a model parallel to that of the extreme groups method of establishing a proficiency score was employed (Zieky, 1977). To accomplish this, early in the semester, English professors from each of over 40 sections of college level writing were asked to identify the two best and two worst prepared students in their class. Those identified as worst were considered not to have the prerequisite skills to be successful in a college writing class while those identified as best were considered most likely to have that which is necessary to succeed in a college level writing course. The extent to which essay scores discriminate best from worst identified students is a direct test of the essay's ability to be used in student placement.

In that placement decisions have a direct impact on a student's program as well as require considerable resource expenditures, a substantial improvement over that which would be achieved by chance is desirable. Within the extreme groups paradigm, random assignment would result in fifty percent of the designations being correct. In the college setting, fiscal and faculty restraints allow for a maximum of 20 percent of the freshmen to enter pre college writing classes; the remaining 80 percent will enter college level writing classes. In this scenario, random assignment will accurately place sixty eight percent of the students. For these reasons, eighty percent correct placements was adopted as the minimum standard by which to judge the placement program as successful.

Figure 1 depicts the accuracy by which the essay exam discriminated between best and worst students. At three correct, the essay correctly identified 95 percent of the best and 35 percent of the worst identified students for an overall accuracy rate of 65 percent. Four correct yields correct decisions for 62 percent of the worst students and 79 percent of the best students for an overall accuracy rate of 71 percent. Using five as the cut off score, correctly categorized were 92 percent the worst students and 51 percent of the best students for an overall rating of 72 percent correct. As one might expect given the reliability coefficient, regardless of the cut off score considered, the minimum standard of 80 percent correct was never attained.

The persuasiveness of the above data was strengthened by examining the efficiency of alternate measures. The results of RS, a measure developed solely for this study, appears in Figure 2. RS scores range from one to nine. At a score of four, accurately placed were 57 percent of the worst students and 50 percent of the best students for an overall accuracy score of 54 percent. Although not as effective as the essay, RS's accuracy at discriminating the worst students was positively considered until the source of the scores were disclosed. RS, which accurately identified 57 percent of the worst students was the last digit of the students social security number.

Although not administered as a measure of writing skills, the results of a multiple choice test of reading were available and appear in Figure 3. Review of these data indicate that using a criterion score of 52, 74 percent of the best students and 73 percent of the worst students were accurately identified for an overall accuracy score of 74. The relatively high accuracy rate supports to some extent the general verbal factor in both reading and writing scores. SAT results, not required for admission, were available for 30 of the best and worst designated students.

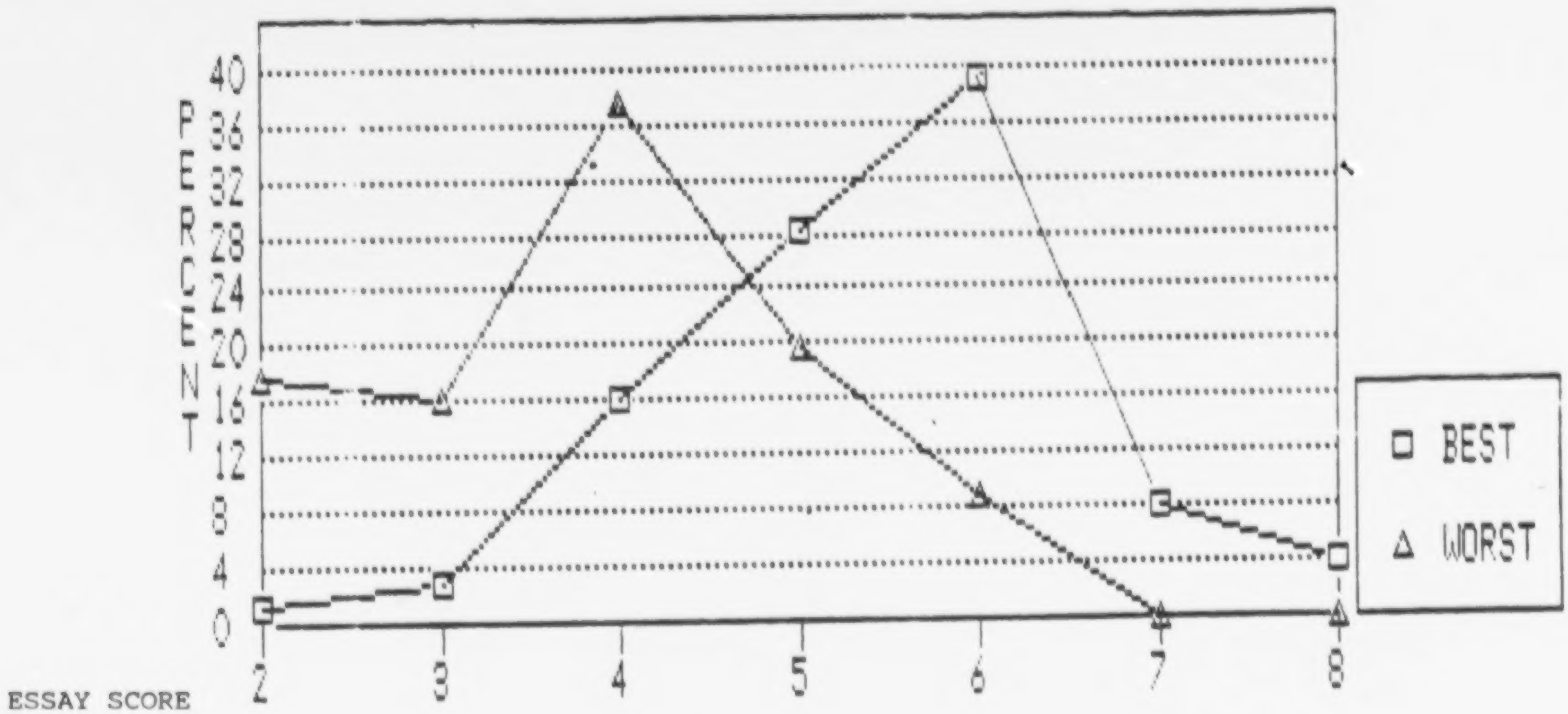

FIGURE 1

Essay Exam Scores Used to Distinguish
"Best and "Worst" Writing Students

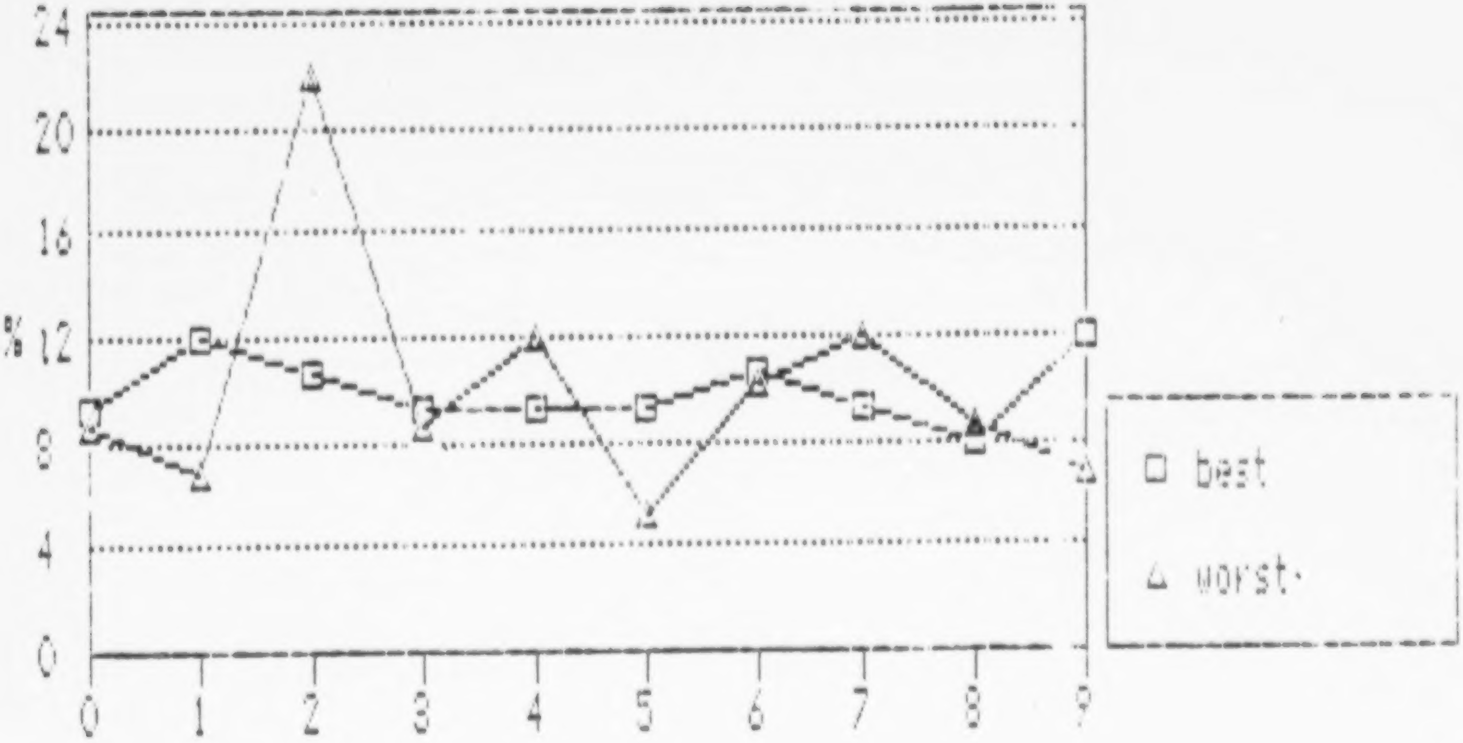

FIGURE 2

RS Scores Used to Distinguish "Best" and "Worst" Students

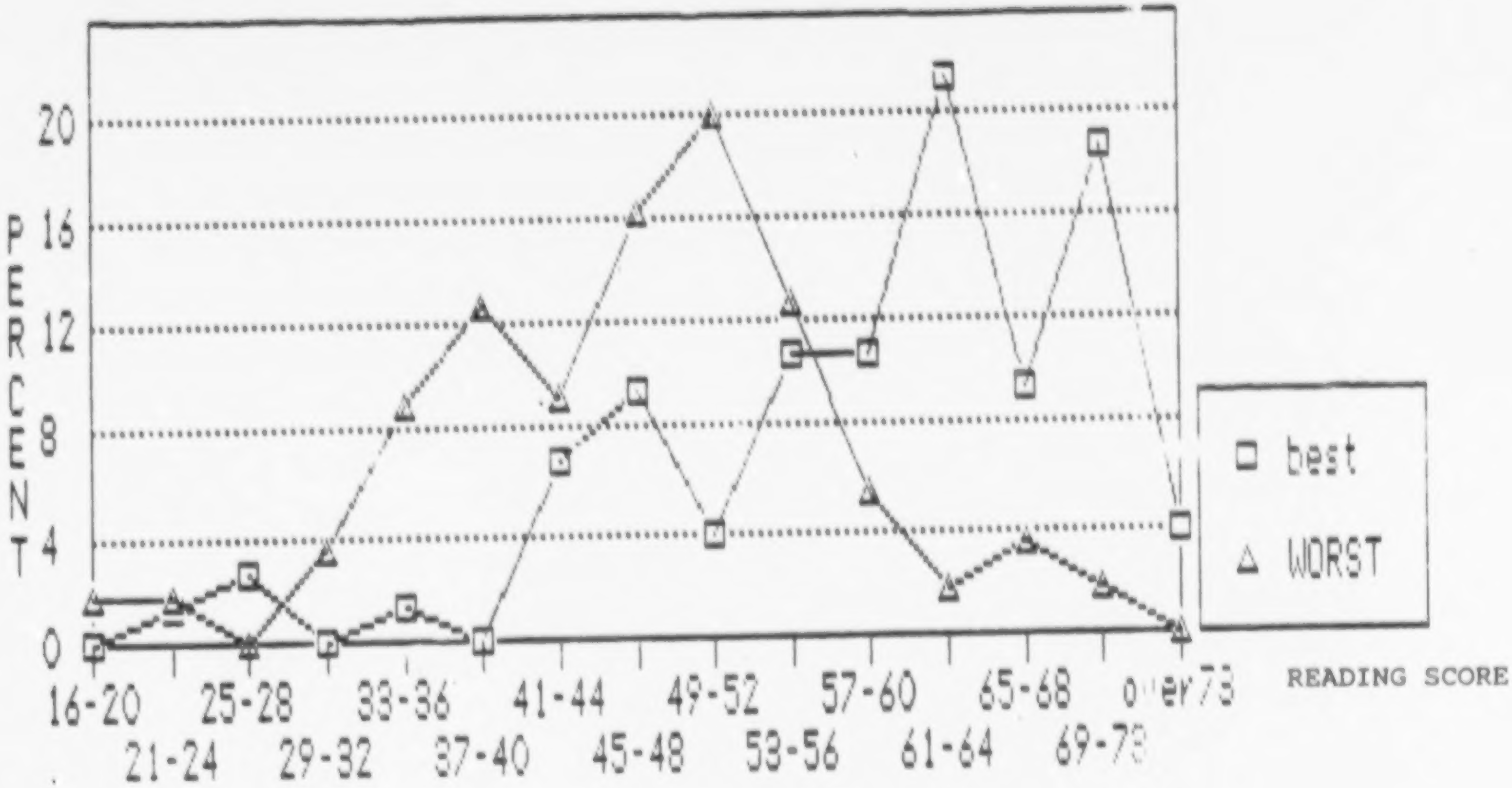

FIGURE 3

Reading Scores Used to Distinguish between "Best" and "Worst" Wrinting Students

As can be seen in Figure 4, a score of 34 or less on the Test of Standard Written English (TSWE), 85 percent of the best and 61 percent of the worst students were accurately identified for an overall rating of 73 percent correct. Although a test of writing, the TSWE is not geared to the appropriate difficulty level to discern the two populations.

Although not selected to measure prerequisite writing skills, either multiple choice exam was superior to that of the essay in discriminating between the best and worst writers. However, neither alone was able to meet the 20 percent maximum misclassification standard. However, these data diminished the confidence of the English department faculty in the sole use of an essay exam. However, despite the evidence presented, reliance on a multiple choice measure did not have the complete support of the English department faculty. Compromise between psychometric principles and political realities facilitated the implementation of an assessment program which employs two measures of writing.

The Assessment Program

Although a second year of development would have provided valuable data, the desire to identify students in need of assistance prior to their entry into a college level writing class prevailed. Thus, in the Fall of 1987, incoming freshmen were both tested and placed in writing classes. The program developed utilized that which was learned during the first year. In particular a two stage process was developed. The first stage involved the administration of a nationally normed multiple choice writing test developed for two year college freshmen. Students scoring above the 52 national percentile was adopted as the first cut score. All students scoring at or above this point were placed in a college level writing courses. An essay exam, taken by all students was used to place those students scoring below the multiple choice cut score. The essay exam was modified in an effort to increase the reliability. In particular, rather than a 20 minute exam, the time allowed for writing was increased to one hour.

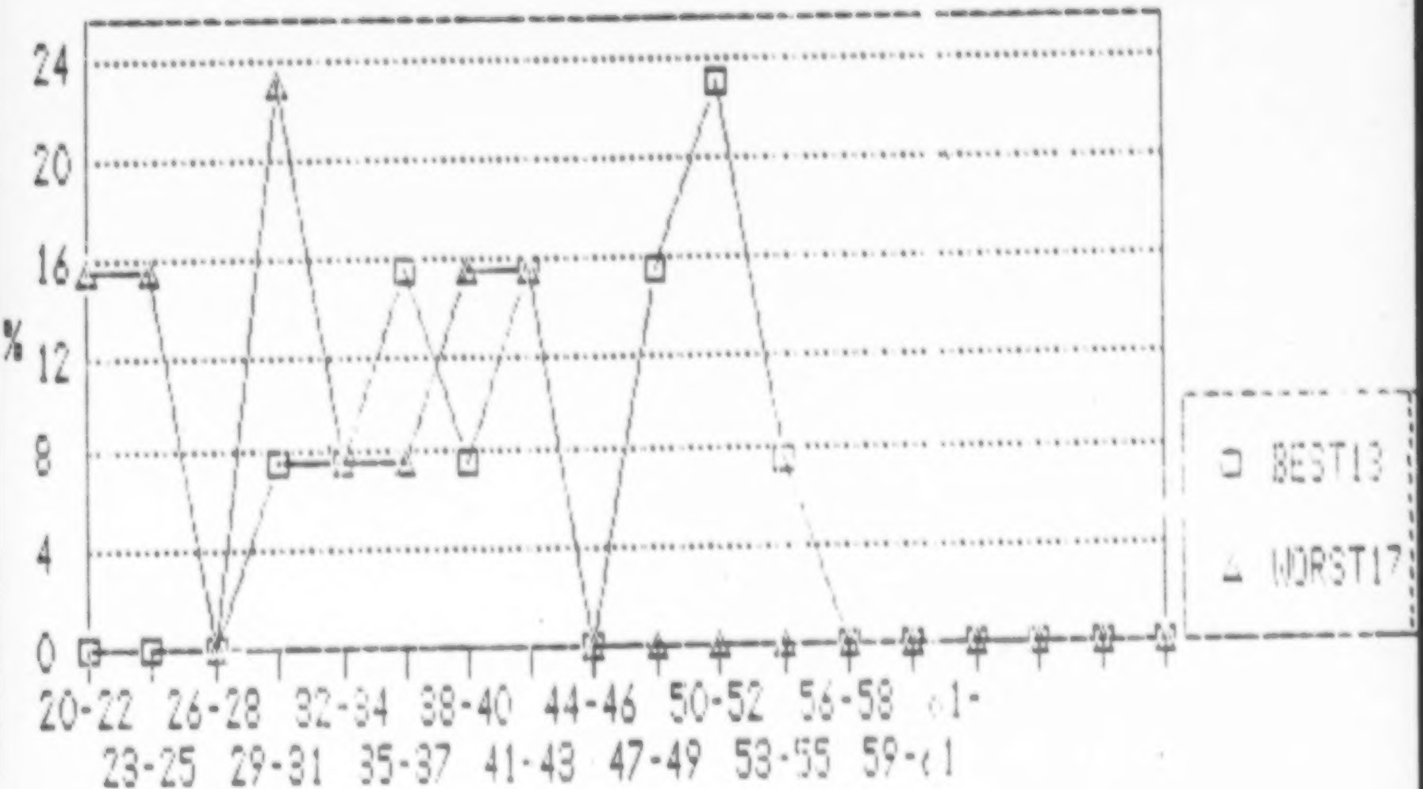

FIGURE 4

Test of Standard Written English Used to Distinguish "Best" and "Worst" Writers

Reliability of Exams

The best reliability estimate of holistically scored essays requires the identity of raters to be discernible. In this manner, errors over time within one rater as well as errors between raters may be calculated. In that this was not available, correlation methods were employed. Excluding one error source, correlation estimates tend to overestimate the reliability coefficient (Breland, 1987). Based on a sample of 300 of the over 2000 essays written, the correlation between the two ratings for each essay was .51. This approach, somewhat analogous to halving the number of items on a test, was statistically corrected to .68 (Spearman Brown adjustment). Given the spurious nature of this figure, it is likely that the true reliability coefficient of the essay is between .51 and .68. Although an improvement over the pilot data, the essay's reliability continues to be insufficient to confidently base decisions.

The multiple choice writing test was selected because of the appropriateness of the estimated difficulty level for the colleges' freshmen population. Published normative data report the reliability for the multiple choice exam to be .83.

Predictive Validity

In addition to comparisons between professor judgments, grades were available against which to compare placement scores and decisions. In addition both faculty and students involved in the process were surveyed as to their attitudes toward the assessment and placement program.

Extreme Groups. Similar to the pilot year, in the sixth week of the semester, faculty members were asked to identify the two best and two worst students in their class. Unlike the pilot year, students were placed into either college or precollege writing classes. Although somewhat confounded by placement, the relative efficiency of either test in discriminating extreme groups was high. For either exam, the number of students misclassified is below 20 percent.

Correlation Analyses. Correlation analyses were performed in an effort to gather additional data as to the relationship between test scores and professor ratings. Grades, in part dependent on the entry skills of students, were included in the analyses performed. As can be seen in Table 1, the multiple choice test is a superior predictor of either grade or professor rating. For the college level writing class, combining the multiple choice and essay measures increases the relationship demonstrated. Professor ratings are more highly correlated with test scores than grades. This is not surprising in that grades are dependent not only on a student's entry skills but other variables such as instruction and motivation.

Table 1
Multiple Choice and Essay Tests Correlations
with Grades and Professor Ratings

English Class	Pre College			College Level		
Assessment	Mult Ch	Essay	Comb*	Mult Ch	Essay	Comb*
Criterion						
Grade	+.21	+.14	+.23	+.25	+.18	+.28
Prof Rating	+.46	+.22	+.46	+.52	+.41	+.58

* Multiple R from Regression

Reaction to Placement. In total, 26 faculty surveys were returned. Faculty were asked to compare Fall 1987 students to that of semesters past on several dimensions; response choices ranged from 1=Better to 5=Worse. These data, presented in Table 2, indicate that nearly half the faculty perceived students' writing skills at the start of the semester to be better or somewhat better than that of prior years. It is interesting to note that over three quarters of the faculty regard the end product of either class to be better than that of earlier semesters. Thus a substantial number of professors who did not perceive a change at the start of the semester, consider the end product to be superior to that of prior years.

Table 2

Score Class Dimension	Mean Rating Pre Coll	 College	% Better or Somewhat Better Pre Coll	 College
Attitude	2.1	2.4	78	50
Motivation	2.4	2.4	67	44
Writing Skill				
Start of Semester	2.8	2.4	44	50
End of Semester	1.9	1.9	78	81
Attendance	2.2	2.7	56	38

In total 558 college and pre college class writing class students completed surveys at the end of the semester. Over 66 percent of the pre college students agreed with their placement while 91 percent of the college level writing students did similarly. Of those disagreeing, students were nearly evenly split between preferring a more advanced writing class and preferring a more basic English course. Nearly all students indicated their writing improved as a result of the writing class.

In this manner, evidence to support the psychometric qualities of the assessment program was gathered. In particular, the combined efforts of two measures of writing, though the auspices of both research and faculty interests resulted in an assessment program which was supported by all factions of the college.

Summary and Recommendations

In reaction to a perceived decline in the entry skills of students in college level writing classes, faculty pressured administrators to institute an assessment program for placement into college level and pre college level courses. This set the framework for confrontation between faculty and researcher as to the assessment measures to employ. In particular, faculty were supportive of a single essay exam, holistically scored, as the sole placement tool. Research interests, concerned over the poor psychometric qualities of the essay exam, preferred not only multiple choice measures of writing but multiple measures of writing. Through the collection and presentation of extreme groups data, all college factions were satisfied by the two step assessment program which utilized both essay and multiple choice exams.

Placement decisions impact both the students and institution. It is imperative that colleges proceed slowly so that one may be confident that decisions are based on the best possible information. Without these assurances, colleges may be expending substantial resources to make important decisions that are no more accurate than that which could be made by flipping a coin. Data collected may be used by college administrators to not only determine the effectiveness and efficiency of the program but for communication within and between campus constituencies.

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A Comparison of Two Placement Methods For Writing Courses

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For the past three years, Massasoit, like many community colleges, has been grappling with questions of content and standards for a general education "core" curriculum, and of how to enable our many underprepared students to meet its demands. In December 1987, the college faculty approved a competency based Core Curriculum requiring students to complete two semesters of English Composition, and establishing a developmental course, Introductory Writing, for those whose writing skills are too weak to allow them to begin English Composition I. The Core Curriculum proposal specified that placement in developmental courses would be mandatory for students who did not demonstrate adequate skills on placement tests administered at new student orientation.

English department faculty recommended holistically graded essays as the most appropriate placement method for writing courses. A one day orientation schedule, availability of faculty readers during the summer and cost considerations made immediate adoption of this placement method impractical. A standardized, machine scored test (MAPS Usage) was chosen as an alternative placement instrument, but its validity was viewed with scepticism by many English faculty members. Since faculty acceptance of mandatory placement depended to a large degree on belief that placement recommendations were appropriate, it was important both to bolster the credibility of the MAPS test within the department and to explore the faculty preferred placement method, holistically scored writing samples.

Some form of placement testing has been conducted at the college for fifteen years, although tests have been changed a number of times. The results of the testing program, particularly in language skills, have been underutilized. Few developmental courses were offered, and placement in them was advisory only. The mandatory placement provision of the Core Curriculum proposal and the addition of the developmental course made effective testing of writing skills a critical issue. The writing sample tests the ability to think analytically, organize information and express ideas, as well as mastery of the mechanics of grammar (Crocker,1987).

The project described here was conducted in two stages: a pilot study completed in Spring 1988; and a large trial of holistic scoring that is in progress this Fall semester. It was designed to serve multiple purposes:

1) To develop standards and procedures for using holistically graded essays for placement in writing courses.

2) To compare course placements made using MAPS Usage scores with those made using holistically scored writing samples.

3) To determine if *either* essays or standardized test scores can assist in placing students appropriately in writing courses.

Because the Spring pilot study was inconclusive as to the efficacy of either placement method, and revealed some methodological problems with the holistic scoring process, this paper takes the form of report on work in progress. Results of the pilot were used to make improvements in the scoring method before a large trial this Fall, which used holistically scored essays in a two stage placement process for writing courses.

PILOT STUDY

Holistic Scoring Methods

Holistic scoring methods are premised on the fact that a piece of writing communicates a "whole" message to its audience, and that communication relies on more than particular strengths and deficiencies in usage or style. Holistic scoring asks an evaluating reader to form an overall impression of the quality of a piece of writing and to rate it according to previously agreed standards. It allows a more direct means by which to measure the ability to communicate in writing than do standardized tests that simply ask students to recognize errors in standard English usage. The method is used in the College Board's scoring of essays from the English Composition Test and in some statewide assessments of basic academic skills.

There are several variations of holistic scoring, which include essay, analytic and dichotomous scales; feature analysis; primary trait scoring; and general impression marking (Cooper, 1977). All of the variations rely on providing a holistic scoring guide, practicing the method with other raters before scoring to establish consistent standards, and arriving at quick judgements without making marks or revisions on papers. Multiple readings of a single piece of writing are often used to establish reliability of scores. Rates of agreement between readers are used as an indicator that consistent standards are being applied. When raters from similar backgrounds are adequately trained with a holistic scoring guide, they can achieve 80-100% agreement in ratings of individual pieces of writing, and scoring reliabilities as high as .90 on scores of multiple pieces from individual students (Cooper, 1977). Predictive validity coefficients for essay tests are in the range of .20-.60, not much lower than those for standardized tests of writing skills (Crocker, 1987).

Procedures

All incoming matriculated students at Massasoit are given placement tests in reading, language usage and mathematics at new student orientation sessions. Multiple Assessment and Placement Series (MAPS) tests published by the College Board were used for this purpose for the first time at Massasoit in Spring 1988. Students were given course recommendations in English, Mathematics and Reading based on their MAPS test scores. Students who scored 2 or below on the usage test were advised to register in Introductory Writing, those 21 or above in English Composition I.

During the first week of classes, students in English Composition I or Introductory Writing were asked to write a 300 word essay in class. They were given a choice of three topics and fifty minutes in which to write. Essays were collected and read by course instructors, who were asked to determine which writing course was appropriate for each student and to record there recommendation without making any marks on the essay. Essays were retained for later holistic scoring.

The holisitic scoring project utilized aspects of the essay and dichotomous scale methods. Instructors of the Introductory Writing course developed a list of positive and negative characteristics of writing and provided examples of student essays that were typical of students in Introductory Writing or English Composition I as a guide for readers. No formal training in holisitic scoring methods was given.

One hundred and seventy-five essays were selected to be scored according to the defined standards. Essays were selected with the sample weighted towards those which course instructors had judged to be weak or ambiguous, since identification of students needing the developmental writing course was the principal placement task.

Seven readers read two groups of 25 essays each, paired with a different second reader for each group. Readings were done independently, without knowledge of the placement recommended by the other reader. Readers were asked to rate each essay on a four point scale: a score of '1' indicating a weak essay that would clearly place a student in Introductory Writing; '2' an essay that was "borderline" or problematic (i.e., ESL or learning disabled writers), and that the reader was uncertain of the appropriate placement; '3' an essay indicating the student was ready for English Composition I; and '4' suggesting consideration for placement in English Composition II. The essays for which the first two placements differed were distributed to four of the original seven readers to attempt to resolve differences and uncertainties in placement.

At the end of the semester, grades in English Composition I were compared with placement recommendations made on the basis of each method. The fact that many students who would have been placed in Introductory Writing by either their Usage scores or their essays were actually enrolled in English Composition I allowed a comparison of success rates in the course between this "misplaced" group and those whose scores indicated that they were prepared to begin the college level writing course.

Results

There were two problems with methods and data in this pilot study which make specific findings of the research inconclusive:

1) Although general criteria for evaluating essays were established prior to scoring, no formal training in holistic methods was conducted for readers, nor was there any systematic attempt to maintain consistent standards among readers.
2) Usage scores were missing for 15% of students in the sample. When combined with unresolved essay placements for some students and registration in two different courses, this meant that placements based on both methods could be compared with grades in English Composition I for less than half of the sample.

Results have nonetheless been useful in developing procedures for the larger trial of holistic scoring methods, and for identifying problems inherent in selecting a placement method.

Holistic Scoring. Agreement between readers on essay scores is an important indicator that scoring standards are consistent. In the pilot study, readers agreed on placement for 60% of the essays in the sample; one reader assigned a "borderline" score for 25%; and readers disagreed for 15%. Essays on which readers did not agree or were uncertain were given to a third reader for resolution. After the third reading, placement was still unresolved for 6% of the essays.

Individual readers' likelihoods of assigning students to Introductory Writing differed significantly. Agreement between individual pairs of readers ranged from 52% to 72%. The lowest rates of agreement ocurred in pairs which also assigned the largest numbers of borderline scores. When multiple differences occured between two readers, they were most often in the same direction. Individual readers also differed in their scoring of the three different topics.

There was variation in the percentage of essays on each of the three topics which were assigned to the developmental course, both for the whole group and by individual readers. The pattern of differences was complex, and suggested a number of contributing factors, including that some topics were chosen by weaker students or elicited weaker essays, as well as reader bias and differences in scoring standards.

Even with the most "objective", rigorously applied scoring system, legitimate differences in scoring will occurr among readers. Any group of writing samples will contain some essays which manifest marginal skills that make placement problematic. But the many inconsistencies in scoring in the pilot study highlighted the need for further development of the holisitic scoring method before a large trial was attempted.

Essay vs. Usage Test placements. MAPS Usage scores were available for 106 of the 175 students whose essays were in the sample. Agreement between the two placement methods was statistically significant ($p < .001$), although there was a range of scores (15-30) in which recommendations frequently conflicted. Consistency between the two placement methods was high at the extremes of the score distribution. If the essay score is the more accurate measure of writing skill, the Usage test would place 24% of students with scores between 10 and 30 in an inappropriate writing course.

Essay placements vs. Usage Test Scores

Essay placement

[Number of students (row percentage)]

Usage score	Intro	Comp I or II	Unresolved	Total
0- 5	1(100%)	-	-	1
6-10	3(75%)	-	1(25%)	4
11-15	4(44%)	3(33%)	2(22%)	9
16-20	15(56%)	9(33%)	3(11%)	27
21-25	6(20%)	20(67%)	4(13%)	30
26-30	4(15%)	20(74%)	3(11%)	27
31-35	-	12(92%)	1(8%)	13
36-40	1(13%)	7(87%)	-	8
Total	34(29%)	71(60%)	14(11%)	120

Note: 20 was the cut score for placement in Introductory Writing.

Placement recommendations vs. course grades. It has been suggested that placement tests should be used to measure current profiency rather than to predict future success (Moraite, 1987). But the major goal of placement testing is to maximize students' chances of academic success; grades are the most available measure of success. If a placement method is to be useful, it should distinguish to some degree between adequately and inadequately prepared students, when placements are compared to course grades.

Essay and Usage score placements were compared with grades in English Composition I to determine if either method was valuable in placing students in appropriate writing courses at Massasoit. Success in English Composition I was defined as completing the course with a grade of 'C' or better. Data was inconclusive for both methods, although it did suggest that weak positive relationships may exist between both scores and course grades for some groups of students.

In a sample of eight class sections of English Composition I, students' Usage score placements showed no relationship to likelihood of success in the course. For students in the essay sample whose scores were available, there was a weak positive relationship between test score placement and likelihood of success in the course, but it was not statistically significant.

When an essay was unambiguous enough that the first two readers agreed on the score, the relationship between placement and success was stronger, but still not statistically significant. For the more difficult cases where placement was determined after three essay readings, there was a siginificant negative relationship between placement recommendation and success in English Composition I. Students in this group who enrolled in the developmental course on the whole attained better grades than did those who enrolled in English Composition I, regardless of their placement recommendation.

Conclusions

The spring pilot study, although it did not provide definitive answers regarding the best placement method for writing courses, had several useful results. The exploration of holisitic scoring methods suggested that they had the potential to make essays a valid placement tool. The higher than expected correlation between essay and Usage score placements made it possible to convince faculty that it was a reasonable interim placement method, while a plan to use a writing sample was being developed. Questions remained regarding the ability of either method to predict success in English Composition I.

Pilot study results revealed the need to develop the holistic scoring method further before making a decision regarding its use. For this method to be most effective, more extensive training and structured circumstances than were possible in the pilot study were required. No firm conclusions as to its utility could be drawn until a more controlled trial was conducted.

FALL 1988 PLACEMENT TRIAL

English faculty arranged for a workshop on holistic scoring to be conducted for the department by representatives of the Massachusetts Basic Skills Testing Program, which uses this method for statewide assessment of writing skills of students at three grade levels. Materials from the pilot study were used in formal training and standard setting exercises. The exercises were designed to develop a consensus about scoring standards and to give participants some experience in their application. The result of these exercises was a "standard-setting" paper, for which the group was equally divided on appropriate placement. The standard-setter is then used in judging other essays; those papers demonstrating a higher level of skill would be placed in English Composition I, those lower in Introductory Writing.

Faculty agreed on a two stage plan for placement in the Fall semester based on workshop discussions and pilot study outcomes. Students would be given preliminary course recommendations based on Usage test scores at orientation to allow them to register. During the first week of class, students in the two writing courses would again write an in-class essay. The English department agreed to organize a two day mass reading of the writing samples using the holistic scoring methods developed in the workshop.

After reviewing the results of the pilot study, and with the experience of the workshop exercises, a number of changes were made in essay administration and the scoring method. The workshop leaders confirmed our conclusions that topic had an important effect on scoring, both through the quality of essays elicited by different types of topics and through reader biases. They suggested that a single non-narrative topic would be most effective, and one was used in the Fall trial.

Placement was conducted as planned for the Fall 1986 semester, with 1400 writing samples scored in two days at the end of the first week of classes. Twenty-eight faculty volunteers and three administrators participated as readers at different periods.. A standard setting and training session was conducted for readers at the beginning of the first day of scoring. There was a high degree of consensus about placement standards (80-90%), and a standard-setting paper that evidenced the minimal skills needed for entrance to English Composition I was identified. Readers who arrived after the initial training session were trained individually or in small groups, and their scoring "calibrated" to the established standard. To maintain consistent standards, readers were "recalibrated" with a set of four essays at the beginning of the second day and after longer breaks from scoring.

As of this date, placements have been analysed for almost 40% of the essays read. The training and standard setting exercises appear to have been worthwhile, with agreement between the first two readers increasing from 60% in the pilot study 85% in the Fall readings. In this sample, only 6% of the preliminary placements based on Usage scores disagreed with those based on the essay readings. This suggests a somewhat higher concurrent validity for the Usage test than was evident in the pilot study. A count of course change recommendations distributed after the essay readings indicated that conflict may be closer to the 15% figure of the pilot study.

Some of differences in scoring standards between readers remain apparent in spite of the improved training. Some readers placed students in the developmental course more frequently, or were more likely to disagree with others in a consistent direction. These patterns will be analysed further when the data set is complete.

CONCLUSIONS

There were a number of benefits deriving from this research, beyond providing data to answer the specific questions that initiated the project. The English department engaged in a sustantive discussion of their writing courses, and participated extensively in the development of placement standards. They actively demonstrated their committment to the value of an essay as a placement instrument, and reviewed their beliefs about the validity of the standardized test that is in use. The Fall holistic scoring trial proved the value of standard setting and training in making an essay an "objective" measure of writing skills.

Preliminary analysis of the data from both the pilot study and the holistic scoring trial indicates that the Usage test may be a reasonable alternative to a writing sample, if a standardized test must be used for placement. Questions about the ability of either placement method to predict which students can succeed in the college level writing course cannot be answered until Fall semester grades are available. But there are a number of compelling reasons to continue the exploration of writing samples as a placement tool at Massasoit.

Although the 85% placement accuracy suggested for the Usage test may be high, 15% misplacement translates to 200-300 students enrolled in an inappropriate writing course each Fall semester. Unevenly distributed across course sections, this number of underprepared students can impede the progress of an entire class, in addition to the impact of poor placement on individuals' chances of success. Essays have credibility with instructors and students as a direct measure of writing skill and thus make the implementation of the mandatory placement policy easier. A writing sample offers greater flexibility than does a standardized test; form, content and grading standards can be modified to improve placement accuracy. Finally, essays measure skills that an objective test of grammar and language usage cannot: the abilities to think and analyse, and to communicate ideas to an audience.

After the large trial of holistic scoring, the academic dean agreed that a writing sample could be used as the primary placement method for writing courses for the Spring and Fall 1989 semesters. Some changes will be made in scoring methods to simplify the process where possible without affecting validity. Essays which clearly fall well above or below the placement standard will be given only a single reading; second readers will be used only when placement is questionable. A third reader will still be used when needed to resolve disagreement. Training and "calibration" will be part of the scoring process. The English department has been asked to develop a plan for administering and scoring a writing sample which does not disrupt orientation or registration schedules. A number of alternatives are being considered.

Appropriate placement in developmental courses will continue to be an important issue as Massasoit implements the core curriculum. Validation of placement instruments is an ongoing process, and data collection and analysis will continue over the next several semesters. Maximizing our students' chances for success and maintaining the academic quality of courses both give impetus to this effort.

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TEACHING INSTITUTIONAL RESEARCH
TO THE LEARNING-INHIBITED INSTITUTION

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Because of their values and knowledge structures, colleges and universities are frequently indisposed to make strategic choices based on institutional research. These organizations are "learning inhibited" as a direct result of their dedication to producing, disseminating, and preserving knowledge. Consequently, institutional researchers who wish to be successful practitioners by influencing an institution's direction through their research must be skillful teachers as well. This paper draws on individual and organizational learning theory to discuss how organizations learn, identifies and describes some of the more common learning disabilities that afflict institutions of higher education, and proposes some practical strategems for their remedy.

HOW DOES AN ORGANIZATION LEARN?

The current state of organizational learning theory derives from earlier developments in individual learning theory, where there has been general agreement, over the years, on the process by which learning takes place. In The Process of Education, a seminal work first published in 1960, Jerome Bruner characterized learning as involving

> . . . three almost simultaneous processes. First, there is acquisition of new information -- often information that runs counter to or is a replacement for what the person has previously known implicitly or explicitly. . . .
>
> A second aspect of learning may be called transformation -- the process of manipulating knowledge to make it fit new tasks. We learn to "unmask" or analyze information, to order it in a way that permits extrapolation or interpolation or conversion into another form. . . .
>
> A third aspect of learning is evaluation: checking whether the way we have manipulated information is adequate to the task. (1963, p. 48)

Fourteen years later, in *Theory in Practice* (1974), Argyris and Schön described a similar three-part learning process, arguing that ". . . human learning . . . need not be understood in terms of the 'reinforcement' or 'extinction' of patterns of behavior but as the *construction, testing, and restructuring* of a certain kind of of knowledge" (1978, p. 10) [italics mine]. More recent descriptions of the learning process do not differ substantially. Lord and Foti (1986), for example, describe a learning process that consists of *gathering information* and *integrating* this information with a "highly *structured*, preexisting *knowledge system*" in order to *interpret* the world and *generate "appropriate behaviors*" (p. 20) [italics mine].

If these later conceptualizations of the learning process display an evolutionary development, it is in incorporating the realization that knowledge --whether derived from observation of the physical or social world--has action implications that shape the individual's behavior. Like Lord and Foti, a number of contemporary learning theorists follow Bartlett (1932) in conceiving of the mental organization of the action implications of an individual's knowledge system in terms of *schemata* -- hypothetical mental structures that predispose an individual to particular ways of viewing phenomena, integrating new information with his or her knowledge system, retrieving it from memory, and using it as the basis for action: "In essence, a schema provides observers with a knowledge base that serves as a guide for the interpretation of information, action, and expectations (Graesser et al., 1980; Taylor and Crocker, 1981)" (Lord & Foti, 1986, p. 22).

Organizational learning theory, while covering a different domain from individual learning, has developed by focusing on related problems with similar ideas. The critical linking concept between individual and organizational learning is the idea of organizational social cognition: organizations are social entities created by individuals who, through their interactions, create the shared learning structure of an organization. The definitive formulation is Karl Weick's, described here by Dennis Gioia (1986):

> Weick (1979) argues that it is not only behaviors that become structured in organizations but also information and shared meaning --meaning that has been socially constructed, negotiated, and consensually validated. . . . Through the development and structuring of shared meaning and understanding, cycles of interlocked behavior become sensible [i.e., meaningful]. The storehouse of knowledge about "cycles of interlocked behavior" are the individual and consensual scripts held by organization members. (p. 61)

A good illustration of theoretical congruity between the individual and the organization in the application of learning theory is shown in an article that appeared in Harvard Business Review this past spring, written by the head of planning for the Royal Dutch/Shell group of companies (de Geus, 1988). In this article, de Geus asks the question "How does a company learn and adapt?" and describes a sequential learning process that consists of company executives' absorbing new data or developing new ways of looking at existing data; incorporating these new data as new information into their mental models of the business; drawing conclusions from the revised mental models; testing these conclusions against experience; and acting on the basis of the altered model (de Geus, 1988, pp. 70-71).

An attempt to model the learning process as described by the researchers cited above is shown in a heuristic framework in Figure 1. Implicit in the attempt in the model to move beyond the individual organization participant is the critical recognition of the fundamentally social character of organizational learning as distinguished from individual learning: Organizational learning results from shared assumptions, beliefs, and values--and shared structures for realizing them. As noted by Argyris and Schön (1978), "Organizational learning is not merely individual learning, yet organizations learn only through the experiences and actions of individuals" (p. 9).

IMPEDIMENTS TO ORGANIZATIONAL LEARNING

Whether we advise presidents, provosts, deans, department heads, or faculty committees, most of us can provide anecdotal evidence of the difficulty of attempting to modify existing knowledge structures in colleges and universities, and there are a number of reasons why this type of organization is likely to be more learning inhibited than some others:

Effects of Institutionalization. Colleges and universities are institutions of higher education: that is, they are social institutions as distinguished from other kinds of organization. One of their chief responsibilities is to preserve and disseminate societal values --the knowledge and attitudes toward knowledge that the culture deems valuable. Some thirty years ago, Philip Selznick (1957) captured the value-centered distinction between institution and organization:

> . . . 'to institutionalize' is to infuse with value beyond the technical requirements of the task at hand. The prizing of social machinery beyond its technical role is largely a reflection of the unique way in which it fulfills personal or group needs. Whenever

Bruner (1963)	Argyris & Schön (1974)	Lord & Foti (1986)	de Geus (1988)	Emerging Organizational Learning Model
Individual as unit of analysis	Individual or organization as unit of analysis		Dominant coalition as unit of analysis	Collectivity of indivs. enacting org. as u.o.a.
Acquisition of Information		Information Gathering	Absorption	Observation/ Intuition
(Analysis of Information)	Construction of Knowledge	Integration With Knowledge System	Incorporation in Executives' Mental Models	Search for Meaning, Congruence
Transformation ("Manipulating knowledge to fit new tasks")		Interpretation of the World	Drawing Conclusions	Generating Inferences, Hypotheses
Evaluation	Testing of Knowledge		Testing Conclusions	Social Testing; "Consensual Validation"
	Restructuring of Knowledge		(Altering Executives' Mental Models)	Mutual Adjustment of Indiv'l Intuition & Org'l Knowledge System
		Exhibiting Appropriate Behavior	Concerted Exec. Action (Decision-Making)	Change in Predispositions for Action, Intuition

Figure 1. Heuristic Toward a Model of the Organizational Learning Process

> individuals become attached to an organization or a way of doing things as persons rather than technicians, the result is a prizing of the device for its own sake. (p. 17)

Unfortunately, the same characteristics that enable an institution to preserve and transmit societal values make that institution risk-averse and inimical to change. New learning is a fundamental form of organizational change. As a result, who has greater potential to change (and threaten) the very identity of an institution than the person whose avowed preoccupation is institutional research?

Teachers as learners. A second source of inhibition derives from the specific technical functions performed by colleges and universities, namely, teaching and research. Teachers and researchers frequently are disabled by their own learning: If learning consists of the transfer and integration of learning structures, rather than "simply the mastery of facts and techniques" (Bruner, 1963, p. 12), then the intrusion of institutional research with new, alternative (and often, outside the social sciences, alien) knowledge structures and unfamiliar ways of viewing presents, minimally, the need to incorporate or synthesize this information and, maximally, the need to "deconstruct" one's existing knowledge structure in order to reassemble around a new structural principle that substantially revises one's knowledge base. This revised knowledge base may have radically different implications for individual and institutional action. A similar process has been posited by Kuhn (1970) in describing at length the process of scientific paradigm replacement in the sciences.

Lack of legitimacy. A distinct learning impediment is the perceived lack of legitimacy of institutional researchers by members of the collegium. It is not so much that institutional researchers are singled out for malignant neglect --some arts and sciences faculty view professorial colleagues in business and education with the same contempt-- as that some faculty (presidents, provosts, and so on) start from a mental model or knowledge structure that differs from institutional researchers' and that, as a result, renders much of institutional research unrecognizable or --as when researchers lend themselves to such crass exercises as seeking to predict or increase the size of the entering freshman class-- beneath notice.

Dispersion of governing authority. In most organizations there are relatively clear lines of authority by which decisions that permit organizational action are made. Despite the need for social interaction in order for organizational learning to take place, what has passed for organizational learning and action in most large and complex business organizations is limited to a centralized leadership cadre (i.e., managers and/or owners). In the de Geus (1988) example, once the Royal Dutch/Shell executives had been mutually informed and had altered their mental models, organizational action was understood to be a matter of course. In institutions of higher education, however, it is less simple to identify the appropriate decision makers because decision-making authority for most decisions is dispersed across and up and down the organization. Faculty typically have a substantial voice in matters of curriculum development, faculty promotion and tenure, and criteria for the admission and evaluation of students, as well as substantial influence on resource allocation and other conditions of employment. As a result, the watchword for presidents, provosts, deans, and department heads in decision-making on matters of any substance is always "adequate consultation." In this governance framework, a well-defined concept, a critical need, a strategic opportunity can be diffused, unmet, unavailed, and the implications for organizational action buried.

Suspicion of dehumanizing quantification. The rudimentary quantitative instruments of the institutional researcher are subject to suspicion in some quarters of the academy. This suspicion typically comes to a head on measurements of human performance within the institution that imply movement or reallocation of funds, positions, or personnel --particularly as they may affect the teaching and research functions. Quantitatively oriented student outcome measures, teaching effectiveness quotients, quantitative research productivity profiles, faculty flow models --all have generated hostility, resistance, and monkeywrenching at one time or another.

Given the ambiguity of the technical functions of teaching and research, and the bias toward the personal, the idiosyncratic, and the autonomous of many who perform those functions, it is not surprising that any sign of insensitivity to the essentially humane nature of much of the academic enterprise should provoke characterizations of institutional researchers as "soulless quants" who, when they seek to focus on the central mysteries, miss the point of the exercise. Obviously, this characterization is just as reductive as the assumption that those who challenge the indiscriminate application of complex measures are uninformed romantics. The point here is that such prejudicial characterizations and suspicions can prevent institutions from learning how to use institutional research effectively.

Global displacement of expertise. One of the greatest impediments to incorporating the insights of institutional research in the organizational knowledge system is a variation on the age-old theme of Ignorance Militant: Presidents, provosts, deans, you, and I have been conditioned to acquiesce all too readily in the unexamined assumption that a faculty member's specific disciplinarly expertise qualifies him or her as general expert on all institutional issues and problems. Of course, no one believes in the validity of this global application of specific expertise more unexaminedly than the faculty member who has used it to solve all of the institution's problems.

Unfocused presentations and uncertain rewards. For academics --including presidents, provosts, deans, and department heads-- the rewards of focusing their limited decision attention time on institutional research issues are uncertain. Consequently, the appeal of attending to institutional research is tenuous, even counterproductive, for many persons in the academy. For institutional researchers, this argues for making the best use of those opportunities for presentation in their paths. A recurring example of a poor use of an opportunity is entertaining academic decisionmakers with long asides on the glories of technical minutiae. Maybe some presidents are keen to kick back on kurtosis, but I don't know one. On the other hand is the researcher who, perhaps in order not to appear presuming beyond his or her station, presents the institutional leadership with the data, but without a sense of their implications for impact on the institution and without a feel for their implications for institutional action.

REMEDIAL AND EVASIVE ACTION

If the learning of colleges and universities is impeded by the attitudes and values that buoy up and perpetuate defective organizational learning structures, how can institutional researchers get their messages across?

Plant structure. The most useful starting point is to plant structuring devices that will help faculty and administrators to understand what institutional researchers think they are doing. One basic way of doing this is to familiarize your institution with the institutional research process, whereby, as a result of observation and measurement, an institutional researcher transforms phenomena into data, interprets this data and creates information, and in exercising judgment about the meaning of this information for the institution, adds to the institution's possibilities for knowledge about itself (Cleveland, 1985, pp. 21-23; Johnson & Christal, 1985, p.5). The usefulness of this approach is that it replicates what many academic researchers do in their own work (as well as resembling the emerging learning theory model shown in column five of Figure 1). As de Geus (1988) points out, planners and researchers sometimes start out with a mental model that is unrecognizable to those they are trying to educate. To connect new information with some familiar aspect of academics' existing knowledge structure is just good pedagogy.

Of course, knowledge for its own sake is not a sufficient end for the institutional researcher, and so a necessary, second step in the structure-planting process is to make apparent the links between, on the one hand, possibilities for knowledge gained from institutional research and, on the other hand, the resolution of institutional problems and the realization of institutional values, mission, and goals: What should we be doing to serve the area's adult learners? What's the regional market for new doctorally qualified English professors? Has the math aptitude of our freshman admits improved over the past ten years? How does our ten-year experience compare with those institutions with whom we share the greatest number of applicants? Just how vulnerable is the educational mission of this institution under a scenario of no mandatory faculty retirement at age 70?

Institutional research will be valued and attended by other institutional participants to the extent that it can be shown to help them generate answers to questions that have meaning and relevance for them, to the extent that suggestive answers from institutional research account more satisfactorily for troubling phenomena than other answers provided from participants' existing knowledge structure, and to the extent that participants can be enticed to enlarge their knowledge to consider questions that they have not formulated before.

Capture the flag. From the viewpoint of institutional survival and prosperity, there is no higher calling than conducting institutional research. If your institutional leadership doesn't know it, and show it, you have a major public relations problem. What you will need to do in order to start to turn the situation around is to capture the ear of the most powerful source of legitimate authority on your reporting line. You begin to do this in three ways: (1) always giving full measure, pressed down; (2) never going around your immediate supervisor (although talking loudly over his or her shoulder is permitted); and (3) always giving clear indications --in a written memorandum with an appropriately targeted circulation-- when your data show significant implications for institutional action at a high level. (The memo is is like blood in the water: it guarantees the big fish will find you!) As a result of these actions, you now have the attention and good will of someone like your president or provost. This person is the best solution to any legitimacy problems you have with the rest of the institution, and, with a few well-reasoned words from you, will serve willingly as the Institutional Research office's public relations flak. Furthermore, because people who play with giants sometimes get crushed, this person will protect you from chaired professors run amok and other loose cannons. Why this person does this is because he or she knows the information you provide is crucial to the institution, and believes that you are good at what you do. The reason he or she believes this is because you constantly reinforce the belief by providing additional evidence.

Disperse ownership. The dispersion of governing authority across the institution is a major impediment to organizational learning and organizational action. One remedial action is to strategically disperse ownership of the institutional research office across the institution. Anatol Rapoport (1972) points out that one of the reasons parables are so memorable is that they permit their hearers to participate in the mystery of unfolding their meaning. In much the same way, institutional researchers will get their message across to the extent they provide opportunities for faculty and administrators to build institutional research into their knowledge systems and predispositions for action on behalf of the institution. The operative term is strategic: Obviously, not all institutional information can be freely disseminated to every institutional participant or department, and not all institutional participants or departments are interested in the same information; however, where there is a match, an opportunity is created for the cultivation of ownership --by exploring interests, supplying meaningful informational reports, scanning the environment and alerting participants and departments to significant changes. This strategy is based on the exploitation of a number of discrete market segments by the creation of a "personalized" office of institutional research.

Exercise discrimination. Professional peer judgment --such as when faculty evaluate their colleagues for tenure and promotion-- is at the heart of the academic enterprise and central to what it means to be a faculty member. The process is inherently subjective, and the addition of reliable quantitative measures that assist in these judgments is welcomed by most faculty. However, measures which seem to supplant this subjective judgment --for example, by substituting a teaching performance score in the name of objectivity-- often are seen as suspect by faculty, as are those who create such measures and argue for their use. The easiest way to convince faculty that institutional researchers are not evil scientists who debase their calling to curry favor with administrators and pander to legislatures is to show a little judiciousness in the application of quantitative measures. It is important to convince faculty of this because, despite short-term appearances, it is not legislatures, boards of governors, and administrators who determine the strategic direction of an institution; in the long haul, it is the will of the faculty. Institutional researchers lose neither face nor influence by public expressions of concern that their instruments be applied appropriately in the arenas of faculty evaluation, student assessment, and institutional policy-making.

Trade shadow for substance. Anthropologists tell us that among members of the tribe of academe the word for bona fide members of the tribe is the same as the word for human being: That word is faculty. (It is said that the literal, root meaning of the phrase tenured faculty member is, "he-who-walks-totally-erect-and-is-the-glory-of-the-universe.") My own observation suggests that if faculty want to represen themselves as masters of the university, there are few rewards for institutional researchers who oppose them. With regard to the specific problem created by the tendency to globalize expertise, the solution is to insist that faculty bring to the party their legitimate strengths--the same analytical skills, reflectiveness, and objectivity that they bring in their better moments to teaching and research, as well as the particular disciplinary learning model and personal experience of the institution that provide at once a unique perspective on the issues in question and, in the aggregate, suggestive direction for future research. To paraphrase Socrates and former Education Secretary Bennett, if the unexamined life is not worth living, the unexamined faculty pronouncement is not worth hearing. I know few academics so arrogant as to hold out against that logic.

Think strategically. All of the above argues for a "proactive," shaping role in the institution for the practitioners of institutional research: a role that involves defining problems and opportunities; underlining their relevance, pointing out the concatenations, interrelationships, and interaction effects; talking about the consequences; selling the benefits.

The operative mode for this role is facilitative: successful teaching after all, is less lecture and inspired revelation than providing opportunities in which discovery and learning can take place. In operation, the technique is not so much to impose structure as to plant it, and husband its growth.

Institutional researchers also need to master the art of distinguishing a learning opportunity. As a rule of thumb, changing circumstances are a golden opportunity for educating members of the organization whose lives will be affected by change. Obviously, there is considerable room for individual receptivity and ability here: Not every president is comfortable receiving action recommendations from the Institutional Research office --even when the existing knowledge base clearly is inadequate-- but many, many of them don't really know what they want till they see what they can get. Presidents, provosts, and deans --like other people-- give their attention primarily to those things that have meaning for them, and it is all too easy for an undereducated institutional leader to dismiss an array of admissions data to be dismissed with thanks and an admonition to staff that we must all remain truly mindful of the importance of good student enrollments to accomplishing institutional goals.

To counteract the tendency for the Institutional Research office to be perceived primarily as the indefatigable source of a succession of Gibbonesque "damned, thick, square" and perfunctory maintenance reports --and that is indeed the default setting for expectations at many institutions-- institutional researchers have to set the frame and shape the intellectual expectations of the leadership. You don't have to hit 'em with a board, but you owe it to your profession and your self-esteem to teach them not to bring garbage in to your interactions, and you do that by structuring, stretching, and then rewarding their expectations.

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PLANNED ORGANIZATIONAL CHANGE IN HIGHER EDUCATION USING THE ENHANCED NORMATIVE SYSTEMS MODEL

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PURPOSE

This case study examines the application of an Enhanced Normative Systems Model of planned change to a higher education setting.

SIGNIFICANCE OF STUDY

Despite growing evidence in support of the effectiveness of participatory change processes (Allen, 1980; Argyris, 1977; Gross et al, 1971; Heilman and Hornstein, 1982; Lewin, 1951), most change efforts in higher education have emanated from the top down with only token or minimal participation from the faculty (Firestone and Herriot, 1981; Kozma, 1985; Olsen, 1983).

Academic organizations also commonly suffer from "goal ambiguity" (Baldridge, 1983; p. 39) and lack of a mission which looks beyond survival (Hollowood, 1981). To adapt and develop, however, their ultimate purpose or mission ought to be clear (Baldridge, 1983; Hollowood, 1981). Faculty and administrators together need to envision new directions and create ways to realize their shared vision. The Normative Systems Model (Silverzweig and Allen, 1976) enhanced by Metanoic Principles (Keifer and Senge, 1982) provides a promising methodology for those seeking such participatory change.

The Normative Systems Model, based on the action research approach advanced by Kurt Lewin (1951), has been applied as a model for change in corporations, in businesses, and in community settings. With the exception of a reported study of its use to identify and establish a desired culture within a southern college dormitory (Allen, 1980), there is little evidence of its use in higher education settings. The model stresses the importance of cultural influences on organizational development. The cultural ethos of a group can facilitate or inhibit adaptation. When adaptation is necessary and the culture is not facilitative, then change in the cultural norms becomes imperative. By engaging the participants in the process of changing goals and norms within the culture, not by rearranging boxes in the organizational table or adding new positions to already hyper-rationalized organization structures, lasting change is achieved. The engagement of a representative membership in the evaluation of alternatives is supported by the work of Elden (Elden, 1979, 1983). The model further invites researcher and subject cooperation in gathering, analyzing, and employing data in the process of change. The model includes four developmental phases:

1. analyzing the existing culture
2. experiencing the desired culture by way of a select group introducing and employing new systems
3. modifying the existing culture by broadening participation in the new systems
4. evaluating and providing feedback to ensure sustenance and adaptability of desired culture.

Metanoic Principles, a relatively recent development with roots in the management theories of Douglas McGregor (1960), stresses a shared vision and participatory decision making which lead to freedom and responsibility (Keifer and Senge, 1982). The four basic requirements of the metanoic organization include:

1. a deep sense of vision
2. an alignment around the vision
3. a focus on the organization as a system
4. a balance of reason and intuition

Combining the Metanoic principles with the Normative System Model produces a synergetic design for planned organizational change, referred to as the Enhanced Normative Systems Model. The Enhanced Normative Systems Model employs the following strategies:

1. focus on a shared vision to provide purpose and motivation for change
2. participant decision making throughout all phases of the process to strengthen the durability of the change
3. cultural change congruent with the shared vision to sustain the desired change and promote self-renewal.

THE SITE

The state university under study is a regional university attended by 10,000 undergraduate and 2000 graduate students. Founded a decade ago, when the state legislature mandated the merger of a state college with a state technological institute, the university is composed of a College of Liberal Arts, a College of Sciences, and five professional colleges. It occupies three geographically discrete and separate campuses. The College of Liberal Arts is housed on one campus and the College of Sciences on another. The geographical separation symbolizes a university culture fragmented by early loyalties and merger organizational arrangements based more on political expediency than on a balance of intuition and reason.

In 1986, the president, recognizing the need for a new direction and desiring greater faculty participation, appointed the Commission, composed of sixteen faculty, two administrators and a chair from outside the university, to study the academic organization. The Commission was provided a mandate to review all aspects of the academic life of the university and to recommend to the president appropriate organizational changes to enter the University into a new century.

The Commission completed its work in May of 1987 formally recommending to the President sweeping changes. To enter the university into phase III of its development, the Commission was then replaced by the President with a Council for Implementation composed of fourteen faculty. It is the Commission's work, which spans phases I and II, that this paper discusses.

The Commission's early work was characterized by inquiry and discussion which moved from the general notion of what is a university toward the specific purpose of this University. Readings, philosophical and topical, were discussed, outside consultants were brought in and site visits made. Foremost on the agenda was the creation of a vision and mission for the future of the university. To poll the faculty on their attitudes and views, a questionnaire was administered to the entire faculty. The Commission met monthly; subcommittees addressed major issues; and retreats provided time and focus to develop goals and methods for achieving them.

METHOD

In the role of participant observers the researchers followed the organizational change process of the university through phase I and into phase II. Hired as consultants to the process the researchers had access to Commission members, meetings, and documents. Data sources included demographic studies, official documents, reports, interviews, literature searches, and surveys (Doctor, 1985; Jones, 1980; Gricar and Brown, 1982; Gershenfeld, 1981; Wideen and Holborn, 1986). The Commission's Final Report, with the identification of goals and recommendations, provides a primary basis for the outcomes analysis.

The researchers were ". . .responsible not simply to the organizational heads, but also to. . .the rank and file. . ."(Whyte, 1984, p.168) and worked as consultants to and facilitators of the process. Adhering to the constructs of phases I and II on the Enhanced Model, the researchers worked closely with the chair in developing the agenda, timetable and dynamics of the Commission's deliberations and directed the staff in their data gathering pursuits.

Similarly data was organized and analyzed to assess the fit between what actually occurred and what the Enhanced Model would predict to occur in phases I and II.

RESULTS

Evidence, if theoretical constructs of the Enhanced Model are met, should provide 1) support for the analysis of the existing culture, 2) the creation of a shared vision, 3) alignment around the vision, and 4) the experiencing of the new culture by a select group who introduce and employ the new systems. Examination of the data confirms that the process in effect met the conditions of phases I and II of the Enhanced Model and provides encouraging support for the use of the model in higher educational settings.

The first activity of the Commission to develop a shared vision of the desired culture was documented fairly early on the process. That self-analysis was involved in the development of this vision is evidenced in the goals stated below which clearly attempt to change the old fragmented culture based on pre-merger loyalties and merger political expediencies. This vision became the fountainhead from which flowed the Commission's choice to aspire to a multi-purpose regional university of excellence rather than a research of polytechnological institute, a mission statement, and goals and recommendations leading to structural and cultural changes. The major goals recommended by the Commission provide evidence for alignment behind the vision. They include:

1. strengthen the undergraduate program, forge strong ties among humanistic, scientific, and professional education, and improve the quality of undergraduate life
2. strengthen the graduate program and improve the quality of graduate student life
3. encourage quality research, quality teaching and enhance community service
4. expand the relationship to the community as an educational resource for life-long learning
5. develop a more integrated university culture and a more participatory form of faculty governance.

For each goal, the Commission included specific suggestions for its achievement.

The existence of a stated vision alone, regardless of its goal specificity, however, does not satisfy the conditions of the Enhanced Model. Much has been written about the notion that the leader should create the vision around which members align (Burns, 1978; Selznick, 1958; Kiefer and Senge, 1982), this, however, runs contrary to the model under discussion. Experiencing the new culture by a select group who introduce and employ the new systems provides evidence for the sharing of leadership according to the model. The select group, in this case the Commission, created the vision and introduced the new systems. The President in providing the mandate and supporting the process demonstrated the flexibility and creativity required by leadership under this model.

By directing the change efforts of Commission members to what was best for the university, the vision counteracted tendencies toward guildism and departmentalization (Beckhard and Harris, 1987). In the Metanoic sense (Keifer and Senge, 1984) it provided the motivation and rationale for bold recommendations to create a "new vital University" in which there is a strong unifying culture. The strength of the commitment to achieve this culture is evidenced in the members' recommendation to merge two historically separate colleges, the College of Liberal Arts with the College of Sciences, to form a College of Arts and Sciences. This constituted a major step toward breaking down the barriers between the subcultures of science and the humanities and toward unifying the University. The vision of a new cohesive core curriculum designed to strengthen the undergraduate program by forging strong ties among humanistic, scientific, and professional education, further exemplifies the comprehensiveness and power a vision may provide. Alignment behind these and other recommendations was apparent in Commission members' presentation of them to a general faculty meeting which further supports the notion of a select group who introduce and employ the new systems.

As earlier stated the decision making process of the study contrasts with that found at most institutions of higher education. Rather than changes identified by the chief administrator (Firestone and Herriot, 1981; Kozma, 1985), goals and recommendations were identified by the select group, the Commission. The analysis of this case strongly suggests a move toward a more democratic culture. The recommendation to create a faculty Senate, in order to develop a more integrated university culture and a more participatory form of faculty governance, provides evidence of this direction. The creation of the Council to enter the university into phase III represents further expansion of this process. To expand participation, the Council established seven committees, each composed of five appointed and six elected members and co-chaired by Council members.

The analysis raises questions regarding the leadership style presented in the Kozma's findings (1982), which identify the chief administrator as decision maker, or Nelson's work (1984), which advocates the active role of the leader in planned change. This study suggests that a more effective leader may be one who pursues a horizontal decision making style and who encourages and supports members of the organization to fulfill leadership roles. Clearly the direction and tone were set by the President, suggesting the importance of the leader in initiating and supporting the process. Rather than orchestrating and identifying changes to be made, he provided the mandate and financial support that enables the Commission. This leadership style is further evidence in phase III.

The influences of internal conditions (Allaire and Firsirotu, 1984; Greiner, 1967; Gross et al, 1971) and the external environment on an organization (Baldridge, 1983; Gershenfeld, 1986) were evident in the case studied. Although history was purposefully played down in the process in order to focus on the future, the case analysis supports the theory that history affects planned change (Allaire and Firsirotu, 1984; Greiner, 1967; Gross et al, 1971). The desire to change a history of fragmentation and isolation into community with broad communication lines was clearly expressed by members of the Commission and through the faculty questionnaire. The brevity of the university's ten year history coupled with its undesirable characteristics might have significantly contributed to its ability to change.

The use of a faculty questionnaire served, as suggested by Katz and Kahn (1978), to provide not only insight into areas of discontent with existing conditions and their possible remedies, but a real opportunity for all the faculty to have formal input into the change process. The vision of a university community,collegial and connected, may have been the reflection of the frustration felt as a result from a sense of fragmentation and alienation from the decision making process. The desire for a university balanced in research, teaching, and service may reflect the perceptions of a growing imbalance among the three.

The Enhanced Model appears, in contrast to the views of Sarason (1982) and Allaire and Firsirotu (1984), to provide evidence for the ability to purposively change an organizational culture (Ouchi and Wilkins, 1984), by understanding and employing the principles of cultural change, explicit in the model, and to support the new desired culture (Allen, 1980; Lewin, 1951; Heilman and Hornstein, 1982). Predictably the cultural change, in this case, was toward the vision and participative decision making. Moving from a vertically organized culture to a more horizontal one, from a hierarchical to a more democratic culture, requires significant changes in the leadership style of the chief executive and the faculty. Phase III activities promote the notion that such changes strengthen the organizations sense of purpose and ability to adapt.

CONCLUSION

The analysis of the application of the Enhanced Normative Systems Model suggests a practical participative model for planned change which is highly applicable for institutions of higher education and other organizational settings.

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Demographic Analysis of Connecticut's State Technical College System Faculty and Professional Staff: Potential Retirements and Estimated Costs

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PURPOSE

This research was conducted to provide planning information for the State Technical College system, consisting of five 2-year engineering technology colleges and a central office, on the potential impact of faculty and professional staff retirements. Retirements have not been particularly frequent in the past, with only one or two occurring per year. Nonetheless, aging of the administrators, faculty and professionals suggested that it would be useful to learn more about probable future retirements. This had particular importance to the system, as it is liable for certain severance costs.

When staff retire they often have accrued sick and vacation time, for which they must be compensated. In addition, faculty, while hired on a 10-month basis, are paid over a 1 -month period, and are often owed the balance of their salary (called "differential pay") upon retirement. Since Connecticut does not provide centralized payment for severance costs, each institution or agency is expected to pay these items from their current personnel budget. These have not been significant costs in the past, but pose potentially damaging liabilities, especially to small units.

The demographic study was expected, then, to provide answers to a number of questions:

- How many retirements could be expected?
- How much would these cost the system?
- What would be the effect upon units within the system?
- What would be the effect upon teaching departments?

METHODOLOGY

Data were obtained from the computerized State Technical College (STC) personnel system for full-time employees in three categories: administrators (executives, administrators and managers), faculty (faculty and librarians), and professionals (professional non-faculty and counselors). Information was collected by employee including unit, years with STC, years of state service, vacation and sick days accrued, annual salary, retirement plan, and other variables related to retirement status. A "snapshot" was taken of the system as of November 1987.

Descriptive statistics were obtained using SPSS/PC and 20/20 spreadsheet software, by employee category and unit. This included frequency distributions, summary statistics, histograms and other descriptive graphics for six variables: age, years STC service, longevity (total State service, including STC), salary, sick day and vacation accruals. Finally, an attempt was made to use Markov simulation to project potential retirements. This was quickly abandoned when it became clear that basic data required by that modeling method was lacking. Instead SPSS/PC was used to produce lists of individuals who were eligible for retirement.

With the exception of faculty, who must retire by their 70th birthday in accordance with a federal law which expires on December 31, 1993, employees were not subject to mandatory retirement. [Since the time this study was initiated, Connecticut has acted to eliminate mandatory retirement as of July 1, 1988.] Employees included in this study are covered by one of three major retirement plans: (1) State Employee Retirement System, (2) State Teacher Retirement, and (3) Alternative Retirement Plan (TIAA/CREF). In order to identify potential retirees, provisions of the employee's selected retirement plan were examined. Employees were then placed into one of four categories: ineligible for retirement, eligible for early retirement, eligible for "normal" retirement, or subject to mandatory retirement (now moot).

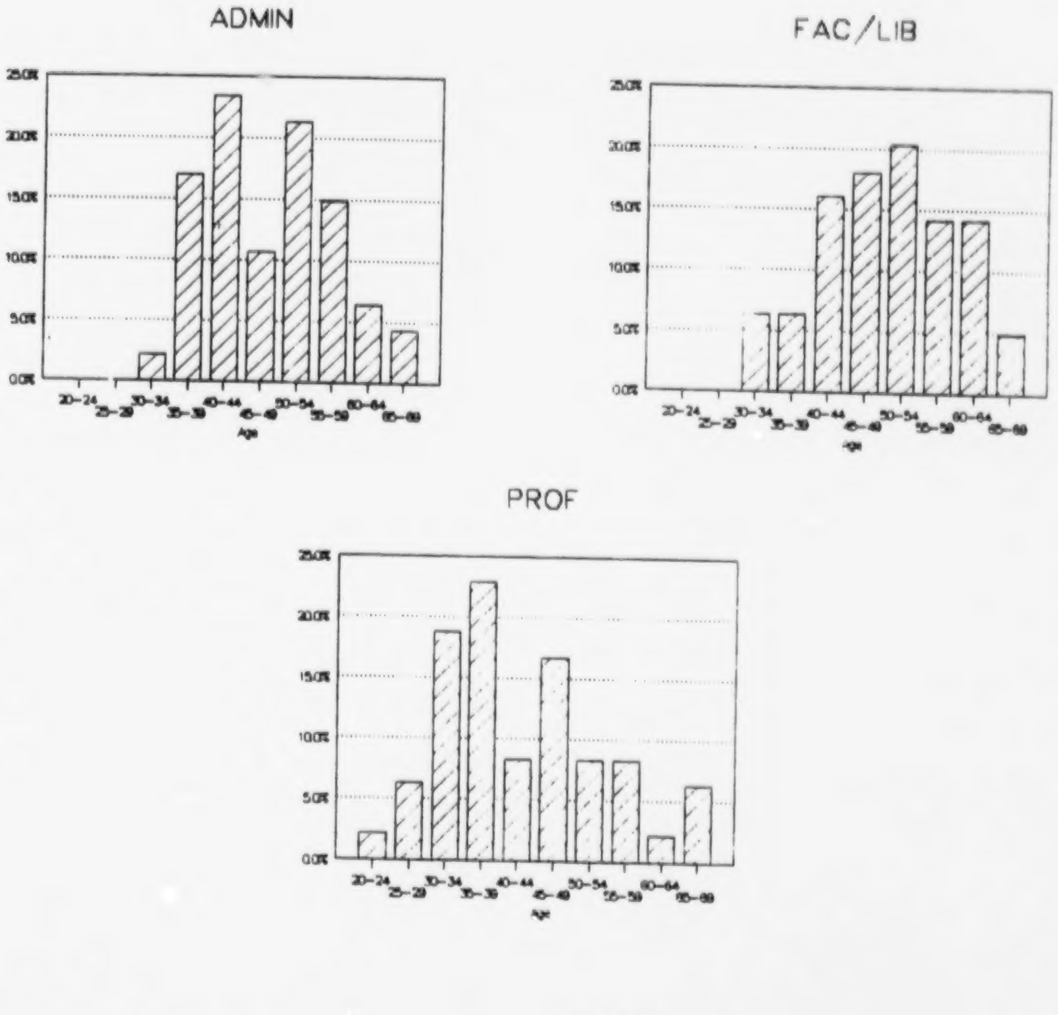
"Normal" retirement refers to a set of conditions under which an individual either qualifies for full retirement or reaches a "normal" retirement age, as defined by his or her retirement plan. The rules differ among the various plans, but generally contain two components -- age (varying from 55 to 70) and years of service (varying from 10 to 35). Early retirement refers to a set of minimum conditions under which an individual may, usually at a lesser payout be eligible for retirement. In most cases the minimum age is 55 and the minimum term of service is 10 years. As is the case for "normal" retirement, the rules differ among the various plans.

RESULTS

Age Distribution

Of the 305 STC non-classified employees (administrators, faculty and professionals), 30.2 percent are age 55 or older, including 16.7 percent who are 60 or older. Within this larger group are 210 faculty/librarians, over one-third of whom are 55 or older, and one out of five of whom is age 60 or older (Figure 1).

Figure 1. Comparison by Age for Three Employee Groups, STC System



There are significant differences in the age distribution of faculty among the five colleges (Figure 2). The most senior faculty is that found at Norwalk State Technical College, with half age 55 or above, and over one-third (35.6 percent) age 60 or older. This contrasts with the age distribution at Greater New Haven State Technical College, the newest college, which has only 15.2 percent of its faculty age 55 or above, and less than 10 percent age 60 or above.

Related Variables

The average STC employee has accrued over 100 days of sick time, and, excluding teaching faculty (who are ineligible), 45 days of vacation time. With average of $38,779, reimbursements for accrued leave represents a substantial cost to the system -- one not usually budgeted for.

Generally speaking, most employees may not retire until they have 10 years of service. Figure 3 shows longevity by employee type. The average STC employee has worked 11.4 years; one-quarter have worked 19 years or more. Faculty/librarians have the longest tenure: 58 percent have been with STC 10 years or more. They are followed by administrators, nearly half of whom have at least 10 years service. However, fewer than 40 percent of the professionals have been with STC 10 years or more.

Figure 2. Faculty Age By Unit

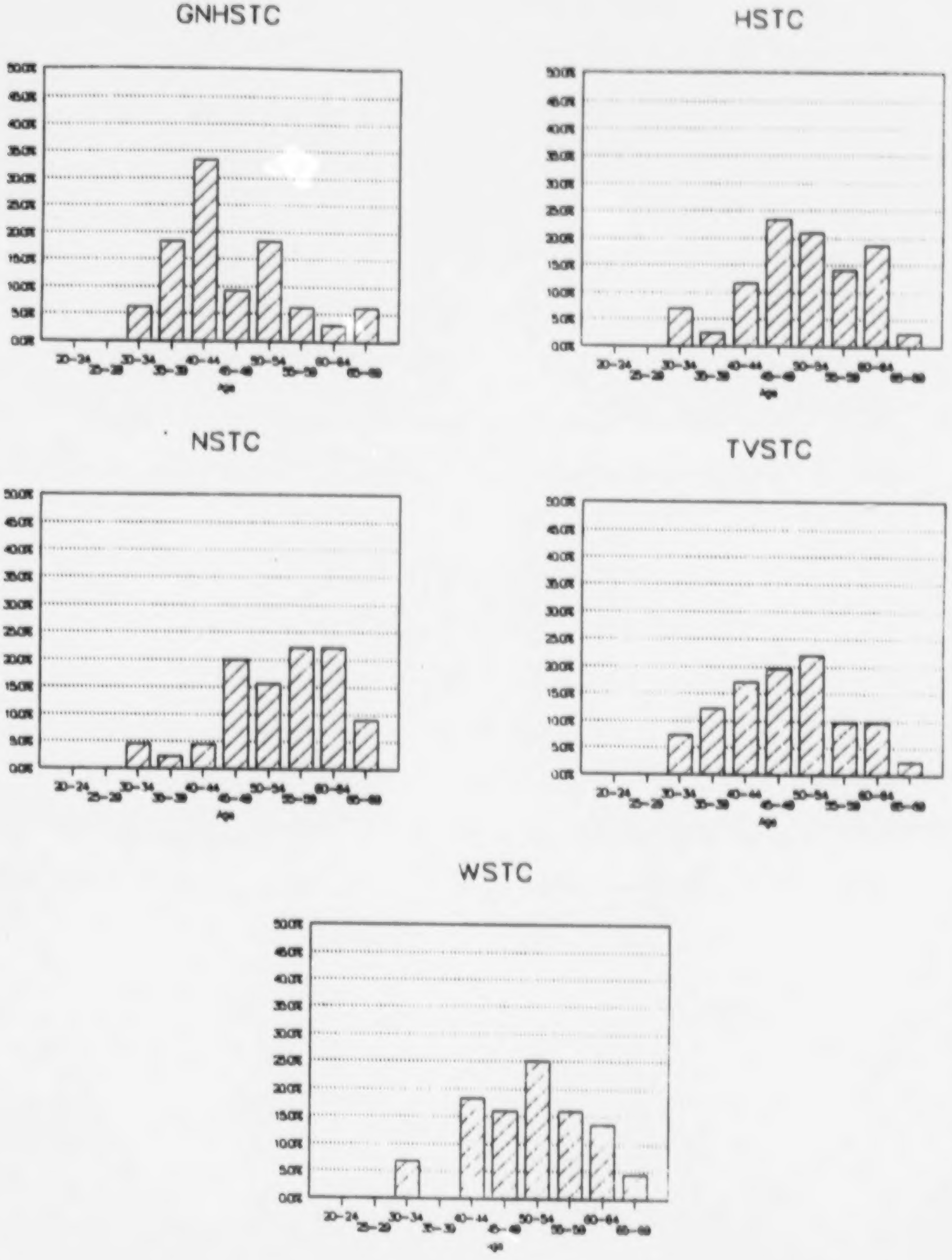
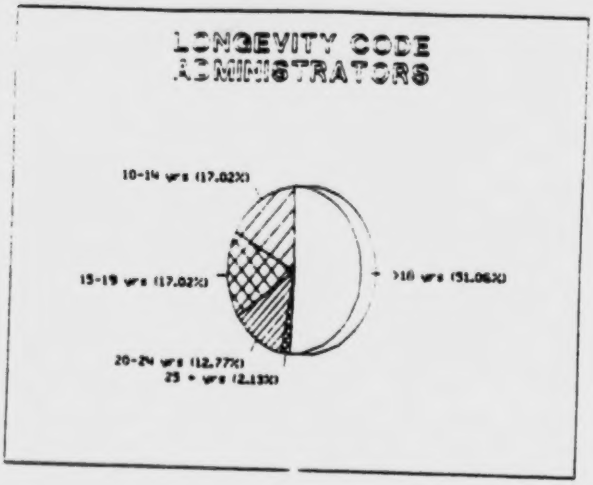
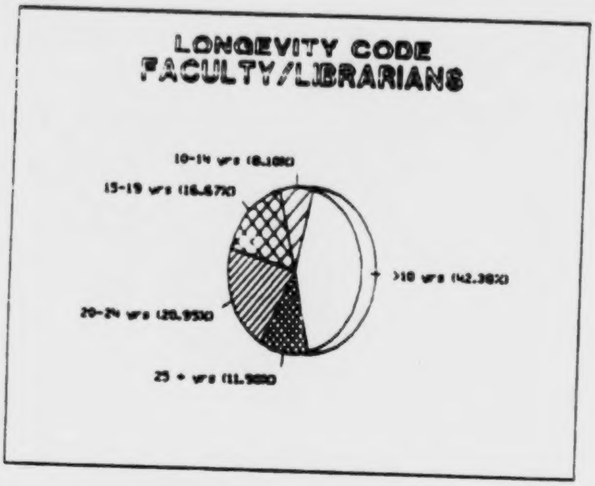
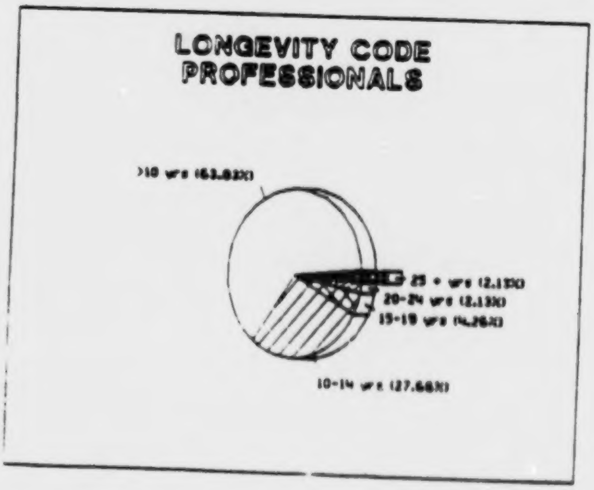


Figure 3. Longevity by Employee Type



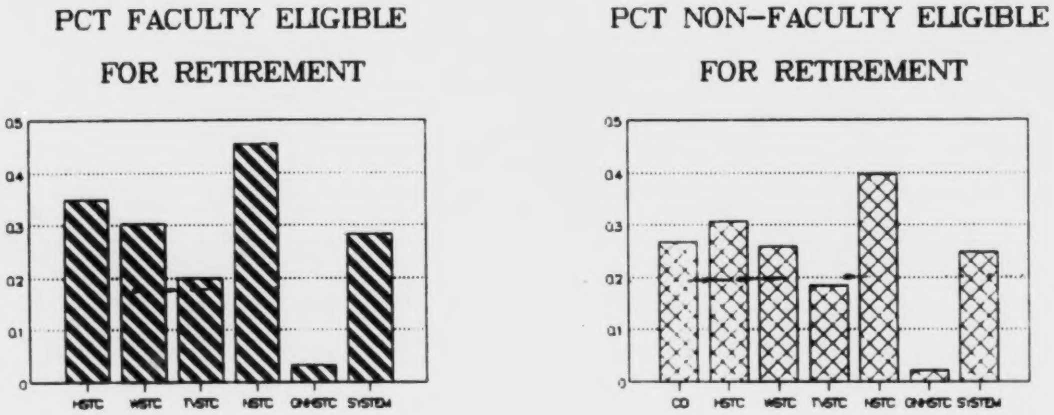




Potential Retirements

System-wide, of the 305 STC administrators, faculty, and professionals working in November 1987, 75 appear to be eligible for retirement. This includes 58 faculty members who comprise over one-quarter of our faculty (Figure 4). Norwalk State Technical College has the largest number of individuals in all three categories who are eligible for retirement, including nearly half of their faculty.

Figure 4. Retirement Eligibility



PCT FACULTY ELIGIBLE FOR RETIREMENT

PCT NON-FACULTY ELIGIBLE FOR RETIREMENT

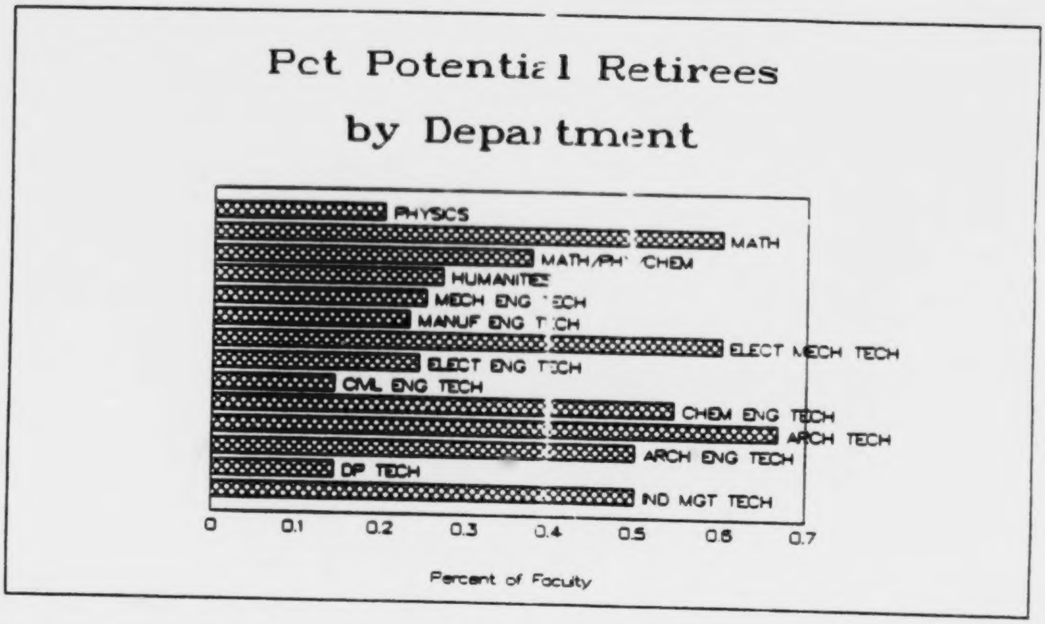
Potential Cost

Should all those STC employees eligible elect to take either early or "normal" retirement, payouts for accrued sick and vacation leave would exceed $800,000. Additionally, retiring faculty would be owed approximately $500,000 for paychecks deferred until summer. The combined potential cost to the STC system represents 10 percent of its annual personnel budget.

Retirements By Academic Department

Potential STC faculty retirements account for up to two-thirds of the staff of some departments (Figure 5). Unfortunately, there is not a direct relationship between declining student demand and number of potential retirees. In fact, one of the youngest sets of faculty members can be found in the Data Processing Technology, where only 14.3 percent of the 28 faculty are eligible for retirement. Yet an earlier study (Steinberg, 1987) found that this one program accounted for over half the drop in the STC headcount enrollment in the three year period 1984-85 through 1986-87.

Figure 5. Potential Faculty Retirements by Department



CONCLUSIONS

1. Demographic analysis of the Connecticut State Technical College system's faculty, administrators and professionals indicates an aging staff:

   - Nearly one-third of the employees are age 55 or older
   - One out of six staff is age 60 or older
   - One out of five faculty is 60 or older

2. Staff members have considerable years of service with the State and the system:

   - On average, employees have 11.4 years of STC service
   - Over one-quarter have 20 years or more of State service

3. Employees have substantial accruals of sick and vacation leave:

   - The average staff member has accrued over 100 days of sick time
   - Excluding faculty, the average accrual for vacation is 45 days

4. A significant portion of the staff is eligible for retirement:

   - System-wide, one-quarter of the staff are eligible for retirement -- 27.6 percent of the faculty and 17.9 percent of non-faculty employees
   - Within the next 5 years an additional one-quarter of the staff (26.6 percent) will be eligible for retirement

5. There is a potential for substantial unbudgeted costs related to retirements:

   - Payouts for accrued sick and vacation leave for those currently eligible for retirement are estimated at more than $800,000
   - Retiring faculty will be owed approximately $500,000 for differential pay (deferred summer paychecks)

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Survey of Part-time Faculty Members

Overview of Results

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Each semester of the academic year hundreds of individuals become part-time faculty members at Montgomery College. During the 1987 spring semester the Faculty Congress proposed surveying all part-time faculty members in the succeeding fall term. The purposes of the survey were 1) to determine their reasons for teaching at Montgomery College on a part-time basis, 2) to identify aspects of their teaching experience at Montgomery College with which they were satisfied or dissatisfied, and 3) to develop a profile of the part-time faculty with respect to selected demographic, academic, and employment variables. Working with the Faculty Congress, the Office of Planning and Institutional Research (OPIR) developed the survey instrument. To protect the identities of the respondents the surveys were mailed from and returned to the Office of Planning and Institutional Research. All data presented in this report are summarized.

During December, 1987, a survey was mailed to the home address of each of the 629 part-time faculty members. A second mailing was made in mid-January, 1988, to any part-time faculty member who had not returned his/her survey. A total of 431, or 69% of those surveyed, responded.

COMPARISON OF FALL 1987 PART-TIME FACULTY AND RESPONDENTS ON SELECTED DEMOGRAPHIC VARIABLES

Table 1 presents a comparison between all part-time faculty members in fall 1987 and those who responded to the survey on selected demographic variables. The respondents are highly representative of the part-time faculty at Montgomery College for the fall 1987 semester with regard to

Table 1. The 431 respondents compared to the 599[a] part-time faculty at Montgomery College in fall 1987 on selected demographic variables.

Demographic Variable	Respondents %	Respondents [n]	All Part-time Faculty %	All Part-time Faculty [n]
Gender				
Male	58	[247]	58	[350]
Female	42	[180]	42	[249]
(Missing data)		[4]		
Total	100	[431]	100	[599]
Ethnicity				
American Indian	*	[2]	*	[3]
Black, non-Hispanic	6	[24]	6	[36]
Asian	3	[11]	4	[22]
Hispanic	1	[5]	2	[9]
White	89	[374]	88	[529]
Other	1	[3]		
(Missing data)		[12]		
Total	100	[431]	100	[599]
Highest Degree Earned				
A.A./A.S.	1	[5]	*	[3]
B.A./B.S.	14	[61]	17	[101]
M.A./M.S.	54	[240]	61	[369]
M.D./J.D.	4	[18]	2	[10]
Ph.D./Ed.D.	17	[79]	18	[105]
Other[b]	10	[45]	2	[11]
Campus (Fall 87)[c]				
Germantown	14	[56]	12	[69]
Rockville	63	[255]	69	[416]
Takoma Park	21	[82]	19	[114]
Off-Campus	2	[6]		
(Missing data)		[32]		
Total	100	[431]	100	[599]

Note. Missing data are excluded from calculation of percentages.

[a] These 599 exclude administrators and staff who held part-time faculty positions during fall 1987. Administrators and staff were included in the survey.

[b] Some respondents both selected one of the listed academic degrees and entered an additional response under "Other." This resulted in more than 431 responses for this item.

[c] Figures for the respondents reflect where classes were taught; figures for all part-time faculty reflect campus through which they were hired.

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the distribution of members by gender, ethnicity, and campus. More than half of both the respondent group and the total part-time faculty are men (58% and 58%, respectively). Eighty-nine percent of the respondents and 88% of the total part-time faculty classify themselves as coming from a white ethnic background; 6% of both identify themselves as coming from a black, non-Hispanic background; persons of Asian descent comprise 3% of the respondents, 4% of the total part-time faculty. Persons of Hispanic heritage are 1% of the respondents and 2% of the total part-time faculty. Less than 1% of either group consider themselves from an American Indian ethnic group. The majority of both respondents and total group taught at the Rockville Campus (63% and 69%, respectively). Approximately 20% of each group taught at the Takoma Park Campus, while 14% of the respondents and 12% of the total part-time faculty taught at the Germantown Campus. Although the highest academic degree of 61% of the fall 1987 part-time faculty is at the master's level, they constitute only 54% of the respondents. An additional examination of all responses of "Other" to this item revealed that many of these were degrees at the master's level, such as the M.B.A. or M.F.A., which had not been specifically listed on the survey. The respondent group is therefore more representative of the total part-time faculty with regard to highest degree earned than the initial comparison suggests.

DISTRIBUTION OF RESPONDENTS
ON SELECTED PROFESSIONAL AND EMPLOYMENT VARIABLES

Among the respondents to the part-time faculty survey, 51% are employed elsewhere on a full-time basis and an additional 25% are employed elsewhere on a part-time basis (Table 2). Approximately one-fourth (24%) of those responding to the survey indicated that they do not have another job. Among those who are employed elsewhere, 167 (50%) indicated that they teach. One-third of the respondents belong to a professional association related to teaching.

Table 2. Distribution of 431 part-time faculty respondents on selected professional and employment variables.

Professional/Employment Variable	Respondents	
	%	[n]
Possess Professional License or Certificate		
Yes	43	[176]
No	57	[230]
(Missing data)		[25]
Total	100	[431]
Belong to Professional Association[a]		
No	32	[138]
Yes, one related to full-time employment	44	[191]
Yes, one related to teaching	33	[143]
Other Employment		
No	16	[67]
No, retired	8	[33]
Yes, part-time	25	[109]
Yes, full-time	51	[222]
Total	100	[431]
Teach Elsewhere		
No	61	[257]
Yes, part-time	28	[120]
Yes, full-time	11	[47]
(Missing data)	*	[7]
Total	100	[431]
Learned of Part-time Faculty Position[a]		
Newspaper Advertisement	8	[34]
Friend/Associate	41	[177]
Inquiry at Department	30	[128]
Inquiry at Personnel	12	[50]
Other	17	[75]
Classes Met[a]		
Day	37	[176]
Evening	56	[260]
Weekend	7	[34]

Note. Except where indicated, percentages are based upon total number of respondents, excluding missing data.

[a] Percentages based on total number of respondents [431]. However, since an individual could indicate more than one response to each item (eg. respondent could be a member of a professional association related to full-time employment and one related to teaching) percentages will not total 100.

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Only 8% of the respondents learned of a part-time faculty position at Montgomery College through a newspaper advertisement; 12% inquired at the Personnel Office. Part-time faculty members in fall 1987 were much more likely to have learned of a position from a friend or associate (41%) or by direct inquiry at an academic department (30%).

The majority of respondents (56%) taught classes which met during the evening. Thirty-seven percent taught classes during the day. Weekend classes were taught by 7% of the respondents.

FACTORS WHICH INFLUENCED DECISION TO TEACH PART-TIME AT MONTGOMERY COLLEGE

Respondents were given a list of 12 factors which may have been influential in their deciding to accept part-time faculty positions at Montgomery College. These factors ranged from "Enjoy teaching" to "Desire to earn money." Each respondent indicated, in order, the five most important factors influencing his/her decision. These results are presented in Table 3.

There are three ways to examine these results. First, what factors were the most popular, i.e. were selected as among the top five influences by the greatest number of respondents; second, what was the average ranking of each factor; and third, what was the interaction of these two, popularity and ranking. The factor which was selected by the greatest number of respondents is "Enjoy teaching." Two-hundred-ninety-nine part-time faculty members, 69% of the respondents, said that their enjoyment of teaching was among the top five reasons they accepted a position at MC. One-hundred-thirteen persons ranked this as the number one influence in their decision to teach part-time at MC. The second most popular influence listed was the "Desire to share my knowledge and experience with students." Fifty-six percent of the respondents (241) selected it among the top five. The third most popular reason, selected

Table 3. Factors which influenced part-time faculty members' decisions to accept positions at Montgomery College.

Factors	Importance Assigned by Respondent										Total N[a]		Mean Rank[b]
	1st		2nd		3rd		4th		5th				
	%	[n]	%	[n]	%	[n]	%	[n]	%	[n]	%	[n]	
Interest in entering the college teaching profession on a full-time basis.	10	[45]	5	[21]	5	[20]	3	[11]	4	[18]	27	[115]	2.44
Interest in full-time faculty position at Montgomery College.	6	[26]	7	[31]	5	[20]	4	[17]	5	[22]	27	[116]	2.81
Interest in continuing my college teaching.	10	[45]	7	[29]	3	[12]	5	[22]	3	[15]	29	[123]	2.46
Increase the diversity of my professional experience.	12	[50]	10	[44]	8	[34]	8	[35]	6	[27]	44	[190]	2.71
Professional development.	5	[22]	6	[24]	7	[32]	7	[31]	6	[28]	32	[137]	3.14
Proximity of teaching site to my work place.	*	[2]	2	[7]	1	[6]	*	[2]	3	[12]	7	[29]	3.52
Proximity of teaching site to my home.	2	[7]	4	[18]	4	[17]	9	[38]	9	[37]	27	[117]	3.68
Class time convenient for my schedule.	2	[10]	3	[12]	5	[20]	7	[31]	8	[35]	25	[108]	3.64
Desire to earn money.	7	[31]	12	[50]	10	[42]	8	[36]	12	[51]	49	[210]	3.12
Desire to share my knowledge and experience with students.	13	[56]	13	[57]	17	[75]	7	[30]	5	[23]	56	[241]	2.61
Interaction with students.	3	[11]	10	[42]	13	[57]	11	[47]	6	[28]	43	[185]	3.21
Enjoy teaching.	26	[113]	15	[66]	10	[45]	11	[46]	7	[29]	69	[299]	2.37

Note. Percentages are based upon number of respondents out of total [431].

[a] Number of respondents among total [431] who ranked factor among the top five influences.

[b] Mean rank based only upon those selecting factor as among the top five influences.

* Less than 1%.

as among the top five by 210 respondents (49%), was the "Desire to earn money." The fourth and fifth most selected factors were to "Increase the diversity of my professional experience," selected by 190 persons, 44% of the respondents; and for the "Interaction with students," selected by 185 persons, 43% of the respondents.

While it is necessary to consider how frequently a factor was selected as influencing an individual's decision to accept a part-time faculty position, it is also necessary to examine how important each factor was regarded. For this analysis the mean rank assigned was determined. Theoretically the possible range of values would be from 1.0 (meaning every person who selected a specific factor as among the top five influences in his/her decision considered it the most important) to 5.0 (meaning that every person selecting a specific factor considered it the fifth most important one in his/her decision): the lower the mean rank, the more important the factor. The range in this study is from 2.37 to 3.68. The most important factor ranked by these respondents is "Enjoy teaching," mean rank, 2.37. Two other factors approach it in ranking, "Interest in entering the college teaching profession on a full-time basis," (2.44) and "Interest in continuing my college teaching," (2.46). Factors which are within the mid-range in ranking by importance include "Desire to share my knowledge and experience with students," (2.61); "Increase the diversity of my professional experience," (2.71); "Interest in full-time faculty position at Montgomery College," (2.81); "Desire to earn money," (3.12); "Professional development," (3.14); and "Interaction with students," (3.21). Factors which have less influence, though still among the top five for many respondents, seem to relate to the convenience of location and timing: "Proximity of teaching site to my work place," (3.52); "Class time convenient for my schedule," (3.64); and "Proximity of teaching site to my home," (3.68).

Finally, it is instructive to consider the interaction of these two, the relative popularity of each factor and the relative importance assigned to it by each respondent who placed it among the top five. The five factors selected by the most respondents listed in order of the mean importance assigned are: 1) "Enjoy teaching;" 2) "Desire to share my knowledge and experience with students;" 3) "Increase the diversity of my professional experience;" 4) "Desire to earn money; and 5) "Interaction with students." In this examination it is seen that the factor selected by the most respondents, "Enjoy teaching," also has been ranked as most important. Among the top five factors for most respondents, three associated with teaching: enjoyment of teaching, desire to share knowledge, and increase the diversity of professional experience, are more important than a desire to earn money. Two factors, "Interest in entering the college teaching profession on a full-time basis," and "Interest in full-time faculty position at Montgomery College, which approach "Enjoy teaching" in importance, were selected by only 27% of the respondents as being among their top five influential factors. One may conclude that although a full-time faculty position is important for just over one-quarter of the respondents, for those individuals it is a very critical factor in their decision to accept a part-time faculty position.

SATISFACTION WITH SELECTED ADMINISTRATIVE ASPECTS OF TEACHING PART-TIME

Respondents were asked to indicate their degree of satisfaction or dissatisfaction with fourteen administrative aspects of their teaching experience at Montgomery College. Categories of response were "Extremely Satisfied," "Satisfied," "Dissatisfied," "Extremely Dissatisfied," and "No Experience/No Opinion." Table 4 presents each aspect and a summary of the responses indicating a level of satisfaction or dissatisfaction. Responses of "No Experience/No Opinion" were excluded. (Table 5 presents the results for the complete range of response options.)

Among the respondents who indicated a degree of satisfaction or dissatisfaction with selected administrative aspects of teaching as a part-time faculty member at Montgomery College, the majority of responses (85%) are either "Satisfied" or "Extremely Satisfied." Respondents were

Table 4. Respondents' satisfaction with selected administrative aspects of teaching part-time at Montgomery College.

	Degree of Satisfaction					
	Satisfied		Dissatisfied		Total	
Administrative Aspect	%[a]	[n]	%[a]	[n]	%[b]	[n]
Clerical support at MC	90	[310]	10	[36]	80	[346]
Guidance from your department/ cluster/institute chairperson	92	[365]	8	[31]	92	[396]
Guidance from your dean	89	[216]	11	[26]	56	[242]
Support from full-time faculty	94	[313]	6	[20]	77	[333]
Collegial atmosphere in your department/cluster/ institute	92	[299]	8	[27]	76	[326]
Arrangement for teaching substitutes, if needed	84	[175]	16	[34]	48	[209]
Information available on campus college policies	86	[324]	14	[52]	87	[376]
Invitations to attend meetings of department/cluster/institute	85	[284]	15	[50]	77	[334]
Information in Part-time Faculty Handbook	96	[339]	4	[14]	82	[353]
Part-time faculty evaluation system	82	[282]	18	[61]	80	[343]
Availability of audio-visual support (materials & equip.)	89	[264]	11	[34]	69	[298]
Photo-copying/duplicating serv.	74	[243]	26	[84]	76	[327]
Parking facilities	78	[310]	22	[87]	92	[397]
Parking fees	53	[166]	47	[146]	72	[312]
TOTAL:	85	[3890]	15	[702]		[4592]

[a] Percentages are based upon the number of respondents indicating a degree of satisfaction or dissatisfaction with each administrative aspect. Percentages exclude those who indicated No Experience/No Opinion.

[b] Percentage of all respondents (N = 431) who indicated a degree of satisfaction or dissatisfaction with each administrative aspect.

most likely to be satisfied with the "Information in the Part-time Faculty Handbook," (96% indicated satisfaction); the "Support from full-time faculty," (94%); the "Collegial atmosphere in your department/cluster/institute," (92%); "Guidance from your department/cluster/institute chairperson," (92%); and "Clerical support at MC," (90%). Aspects with which respondents who expressed an opinion were least satisfied included "Parking fees," (53% of those who expressed an opinion were satisfied, 47% were dissatisfied); "Photo-copying/duplicating services," (74% satisfied, 26% dissatisfied); "Parking facilities," (78% satisfied, 22% dissatisfied); and "Part-time faculty evaluation system," (82% satisfied, 18% dissatisfied). Other areas for which dissatisfaction was expressed by a number of those responding are "Arrangement for teaching substitutes," 16% of respondents dissatisfied; "Invitations to attend meetings of department/cluster/institute," 15% dissatisfied; and "Information available on campus college policies," 14% dissatisfied. For some items many respondents indicated that they had "No Experience/No Opinion" or skipped it altogether. This is especially true for "Arrangement for teaching substitutes," (52% did not indicate a degree of satisfaction/dissatisfaction); "Guidance from your dean," (44%); and "Availability of audio-visual support," (31%).

Table 5 includes all response options presented on the survey. Ninety-five percent or more of the respondents made some reply to each item. It is apparent that many part-time faculty members (49%) had no experience/no opinion regarding arrangement for teaching substitutes and 27% had no experience/ no opinion regarding availability of audio-visual support. Forty-one percent of the respondents indicated "No Experience/No Opinion" with regard to guidance from their dean. This large number may be due to the administrative arrangements at the Rockville Campus. One-hundred-twenty-seven of the 159 who responded in this way, taught at the Rockville Campus, where department chairpersons, not deans, are responsible for part-time faculty. Twenty-four percent of the respondents selected "No Experience/No Opinion about the "Parking fees," 36% were dissatisfied or extremely dissatisfied, and 40% were satisfied or

Table 5. Respondent's degree of satisfaction with selected administrative aspects of teaching part-time at Montgomery College.

Administrative Aspect	Degree of Satisfaction										All Respondents	
	Extremely Satisfied		Satisfied		Dissatisfied		Extremely Dissatisfied		No Experience/ No Opinion			
	%	[n]	%	[n]	%	[n]	%	[n]	%	[n]	%[a]	[n]
Clerical support at MC	30	[126]	44	[184]	5	[22]	4	[14]	17	[71]	97	[417]
Guidance from your department/ cluster/institute chairperson	41	[169]	47	[196]	7	[27]	1	[4]	4	[18]	96	[414]
Guidance from your dean	18	[76]	34	[140]	5	[20]	1	[6]	42	[172]	96	[414]
Support from full-time faculty	31	[128]	44	[185]	4	[18]	*	[2]	21	[86]	97	[419]
Collegial atmosphere in your department/cluster/ institute	27	[113]	45	[186]	6	[25]	1	[2]	21	[86]	96	[412]
Arrangement for teaching substitutes, if needed	12	[49]	31	[126]	5	[22]	3	[12]	49	[199]	95	[408]
Information available on campus college policies	17	[72]	60	[252]	11	[44]	2	[8]	10	[40]	97	[416]
Invitations to attend meetings of department/cluster/institute	20	[82]	48	[202]	10	[43]	2	[7]	20	[85]	97	[419]
Information in Part-time Faculty Handbook	23	[96]	59	[243]	2	[10]	1	[4]	15	[62]	96	[415]
Part-time faculty evaluation system	14	[58]	54	[224]	11	[47]	4	[14]	17	[70]	96	[413]
Availability of audio-visual support (materials & equip.)	25	[101]	40	[163]	6	[25]	2	[9]	27	[112]	95	[410]
Photo-copying/duplicating serv.	17	[70]	42	[173]	13	[53]	7	[31]	21	[87]	96	[414]
Parking facilities	18	[73]	57	[237]	13	[54]	8	[33]	4	[18]	96	[415]
Parking fees	8	[32]	32	[134]	18	[74]	18	[72]	24	[97]	95	[409]

Note. Percentages (except those in last column) based upon total number who responded to each item.

[a] Number and percentage of total respondents (N = 431) who replied to each item.

* Less than 1%.

extremely satisfied. This contrasts with its companion item, "Parking facilities," to which only 4% replied they had no experience/no opinion, 21% were dissatisfied to some extent with parking facilities, and 75% were satisfied to extremely satisfied with the parking facilities at Montgomery College.

SATISFACTION WITH ACCESS TO SELECTED FACILITIES/SERVICES

Part-time faculty were asked to rate the degree of their satisfaction or dissatisfaction with their access to selected facilities or services at Montgomery College. The overall percentage of responses indicating a degree of satisfaction is 85% (Table 6), the same as that rating satisfaction with administrative aspects. This table presents the distribution only of those who indicated a degree of satisfaction/dissatisfaction; it excludes those who indicated "No Experience/No Opinion. Most of the respondents had an opinion about the classrooms and about part-time faculty mailboxes (94% and 92%, respectively). Fewer respondents had an opinion about laboratories (42%), food services (53%), and office space (62%). Among those who indicated a degree of satisfaction/dissatisfaction to each item, the majority (i.e., over 50%) was satisfied. However, looking at the percentages of those dissatisfied, 40% were dissatisfied with access to office space and 23% were dissatisfied with access to telephones. An additional 18% were dissatisfied with access to food services.

This report has presented a summary of the results of a survey of fall 1987 part-time faculty members at Montgomery College. It is the first of several reports. Subsequent reports present additional analyses of the results.

Table 6. Respondents' satisfaction with access to selected facilities/services.

Facility/Service	Degree of Satisfaction				Total	
	Satisfied		Dissatisfied			
	%[a]	[n]	%[a]	[n]	%[b]	[n]
Office space	60	[178]	40	[121]	69	[299]
Laboratories	88	[157]	12	[22]	42	[179]
Classrooms	90	[362]	10	[41]	94	[403]
Part-time faculty mailboxes	90	[358]	10	[39]	92	[illegible]
Telephones	77	[262]	23	[77]	79	[339]
Bookstore	92	[300]	8	[25]	75	[325]
Library	96	[317]	4	[12]	76	[329]
Food services	82	[187]	18	[42]	53	[229]
TOTAL:	85	[2121]	15	[379]		[2500]

[a] Percentages are based upon the number of respondents indicating a degree of satisfaction or dissatisfaction with each facility/service. Percentages exclude those who indicated No Experience/No Opinion.

[b] Percentage of all respondents (N = 431) who indicated a degree of satisfaction or dissatisfaction with each facility/service.

FACTORS WHICH AFFECT RETENTION OF ADULT LEARNERS DURING THE FIRST YEAR OF GRADUATE-LEVEL STUDY

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Adulthood is a time of change, and most adults beginning graduate studies are also involved in anticipated or actual transitions in other parts of their lives. The transition to formal graduate level education itself often adds change and stress to an already changing adult life. Successful transition to graduate education, when viewed within this larger context of adult lives and transitions, becomes not only the scholarly pursuit of knowledge and research, or the acquisition of more complex skills, but also part of the process of creating and sustaining change in adulthood. Many entering graduate students are vitally concerned about how to go about integrating their new role of being a graduate student with the rest of their lives.

This research also focused on understanding more about persisters' and non-persisters' perceptions of the transition itself of entering graduate studies along the following dimensions: role change, positive/negative affect, timing, and individuals' perceptions of their adaptation. Findings strongly support important aspects of a model developed by the author (Oatis, 1988) (see Figure 1) from a synthesis of theories derived from education (Cross, 1981) and psychology (Schlossberg, 1984); and further clarify the relationship of persistence to adult learners' perceptions of emotional support during the transition of returning to school.

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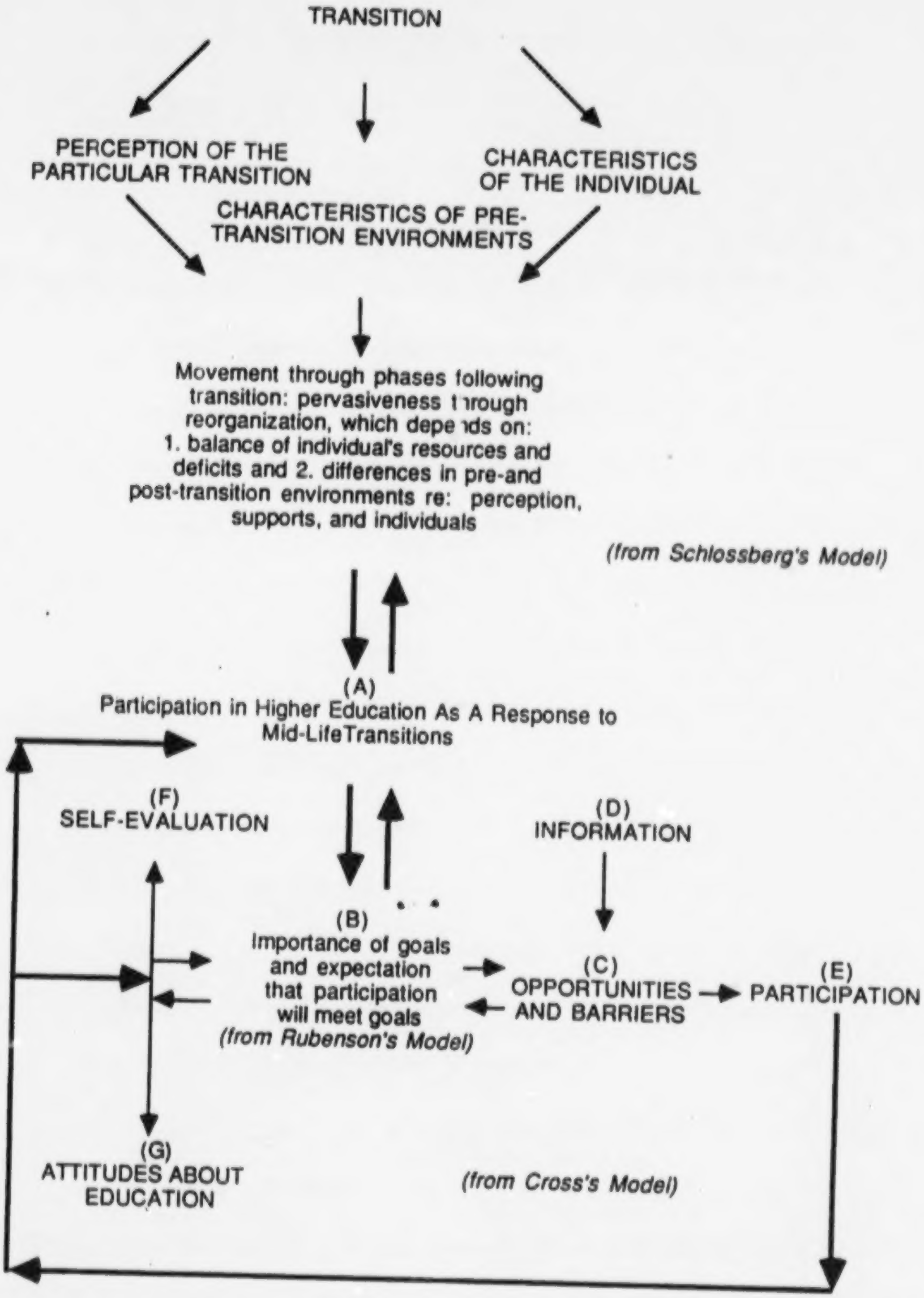
TRANSITION
PERCEPTION OF THE PARTICULAR TRANSITION
CHARACTERISTICS OF THE INDIVIDUAL
CHARACTERISTICS OF PRE-TRANSITION ENVIRONMENTS
Movement through phases following transition: pervasiveness through reorganization, which depends on: 1. balance of individual's resources and deficits and 2. differences in pre-and post-transition environments re: perception, supports, and individuals
(from Schlossberg's Model)
(A)
Participation in Higher Education As A Response to Mid-LifeTransitions
(F)
SELF-EVALUATION
(D)
INFORMATION
(B)
Importance of goals and expectation that participation will meet goals
(from Rubenson's Model)
(C)
OPPORTUNITIES AND BARRIERS
(E)
PARTICIPATION
(G)
ATTITUDES ABOUT EDUCATION
(from Cross's Model)

(Oatis 1988)

Figure 1. A theoretical framework for understanding adults in the transition of returning to formal education.

Schlossbergs' theory emphasized the importance of assessing not only the individual's perceptions of a particular transition, but also the characteristics of pre-transition environments including: internal support systems, network of friends, institutional supports and physical setting. As Schlossbergs' theory highlights, successful adaptation involves movement through the transition itself and depends, not only on the individual's balance of resources and deficits, but also on the individual's perceptions of the environment- including the availability of support. If there is a perceived gap in the individual's inner circles of support (i.e. spouse/significant other, family, friends), then it becomes even more important that support comes from others including university support systems and other students. For example, divorced or separated individuals in this study were more likely to become non-persisters than either married or single full-time graduate students. Extra support from counselors, advisors, faculty, administration and other students can become especially important to those who have already stressed support systems.

For some adults, the transition to graduate studies may be an especially difficult one. If many years have elapsed since undergraduate studies, life has more than likely added increasingly complex roles and responsibilities. In addition, there may be accumulated fears and lack of confidence based on previous educational experiences and initial contacts with the university. Cross hardly touched on this powerful initial effect of

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being in transition in her Chain-of-Response Model. Therefore, the author combined the Schlossberg model with the Cross model to provide a more accurate framework for understanding adults in transition.

For some adults, particularly women, minorities and foreign students, the role of entering graduate student may initially be experienced as painfully incongruent with their other adult roles, responsibilities and goals. As previously noted, Fisher-Thompson suggested that higher education is often experienced by adult learners as a culture (with norms and procedures developed for a younger, more traditional population)- often "out of sync" with the realities and demands of adult lives. This study shows that those who described the transition to graduate studies in more negative terms were also less likely to persist in graduate studies.

Most of the previous research on persistence patterns of adult learners has focused exclusively on demographics in attempting to describe characteristics of persisters and non-persisters to the exclusion of other important variables such as the individual's perceptions of the transition itself and his/her perceptions of emotional support. This study, in addition to selected demographic variables attempted to determine whether or not any statistically significant differences existed from the first semester into the second semester between persisters and non-persisters in the ways they perceived: 1) the transition of entering graduate school; 2) their anticipated and actual experiences of support; and 3) their ratings of the helpfulness of potential services for entering graduate students. Statistical analyses revealed that for males and females alike, more positive perceptions of anticipated emotional support and of the transition itself were positively related to persistence in the first year of graduate studies.

Significantly more of the non-persisters viewed the transition to graduate school as having had a negative impact on their lives, resulting in feeling "mixed" or "low" energy rather than "high" energy; and they also reported feeling "overwhelmed" or "mixed feelings" rather than feeling "challenged". It is clear that many more non-persisters experienced difficulty from the beginning with their transition into graduate school. There was no significant difference between persisters and non-persisters in their perceptions of the timing of the transition in terms of the demands of the rest of their lives.

Overall, anticipated and actually experienced perceptions of support were significantly higher for persisters than non-persisters. The tendency toward more negative perceptions on the part of non-persisters continued through the first semester. In fact, non-persisters became even more negative in their perceptions of actual support than persisters did. Part-time graduate students who were also non-persisters were also more inclined to be negative in their anticipation of support from friends, professional associations, and other students. It is possible that some of these non-persisters may have had a "mind set" which predisposed them toward

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lowered expectations and subsequent disengagement from the university-even in the first semester. It is difficult to determine which came first: negative attitudes, negative experiences, or a combination of both. Given that some adults, especially nontraditional students, may be experiencing more pervasive feelings of "culture shock"; it hardly seems fair to only "blame the victim" for failing to thrive during the first year of graduate studies.

This study also found that more persisters were aware, even from the onset of their first semester of graduate studies, of the importance of receiving emotional support from others. Their anticipated sources of support, more often than for non-persisters, included friends and coworkers as well as people within their newer context - the university community itself: faculty, administration, support staff as well as other students.

Findings further revealed that women graduate students were significantly more likely to view emotional support from friends as important to their persistence in graduate studies - which is consistent with recent research on women's development in higher education on "connected learning". Belenky et al. (1986), in findings from their interviews with women undergraduate students, described connected learning as a developmental outcome of a learning process which promotes personal as well as intellectual growth within the contexts of the individual's life and relationships to ideas, others, and the world.

Findings from this current study also emphasize the importance of peer support for professional-level workers who enroll in graduate education: there were statistically significant differences in the amount of support persisters and non- persisters expected to receive - especially from friends and coworkers. Non-persisters were less likely to anticipate much support from either friends or coworkers. Therefore, there is a relationship between more negative anticipations of support or absence of support from friends and coworkers and non-persistence. Multivariate analysis of variance revealed that for women this is a critical variable.

Most of the entering graduate students in the study cited career as the primary motivation for returning to school. This finding is consistent with previous research on adult learners, including Aslanian (1980) and Cross (1981). Many of the persisters involved in this study were highly motivated by a desire to either advance in their careers or develop an alternate career path; whereas non-persisters were more likely to describe "keeping up with career" as their primary motivation.

Implications for University Practices

The entering adult learners in this study had already experienced the application process, initial advising with faculty, and most of the registration process. These initial experiences (in addition to other factors) may have contributed to non-persisters' lowered expectations of receiving support even before classes began. If this is so, then it becomes ever more

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important to the continued participation of nontraditional students in graduate education that the university as a community examine policies, procedures and the existence of supports which might impact unfairly upon entering adult learners. It is especially important to develop approaches which integrate faculty, administration, staff, and student service professionals in collaborative ways to involve everyone in helping to integrate adult learners into the university community. Such an approach would enable the institution to more effectively address the following question: Are current university structures, policies and practices conducive to assisting adults in their transition to graduate school?

It is clear from the findings of this study that many adult learners anticipate and would welcome more involvement and emotional support from the university community as they make the life transitions connected with their return to formal education at the graduate level. It is also important to offer a variety of supports and services because there is a great deal of diversity in the motivational and life patterns as well as in the needs of adult learners.

The author proposes that collaboration between student services professionals and academic affairs professionals would enhance the design and delivery of orientations, workshops and suport services for adult learners at the graduate level. Examples of models for providing collaborative faculty, staff and administrative support to adult learners at the undergraduate level have already been presented by Chickering (1985); (Knowles, 1984); (Lindquist and Marienau, 1981); and (Greenberg, 1981).

Responses to the questionnaire items in this research study indicate that most of the adults surveyed at the beginning of their studies (85.3% of the persisters and 80.5% of the non-persisters) rated graduate orientations as helpful. They also rated as helpful: career development workshops (80% of the persisters and 72.7% of the non persisters); time management workshops (76.3% of the persisters and 67.8% of the non-persisters); stress management workshops (75.5% of the persisters and 66% of the non-persisters); referrals to career counseling (78.2% of the persisters and 71.5% of the non-persisters); referrals to personal counseling (66% of the persisters and 57.8% of the non-persisters); and referrals to family/marital counseling (50.8% of the persisters and 36.2% of the non-persisters).

In the current study, many of the women who were fulltime non-persisters indicated that orientations for graduate students would be "very helpful" and that math skills refresher workshops would be "somewhat helpful." Women did not differ significantly from male non-persisters in their perceptions of the transition itself of returning to school, or in their career-related motivations. Women were more likely than men to anticipate support from others - especially from friends.

Analysis of the results from the follow-up survey of entering graduate students three months into their first semester indicate that the following

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services would continue to be helpful: childcare, math skills, refresher workshops, referrals to tutors, and referrals to career, personal and marital/family counseling.

Additional comments volunteered by participants through written-in comments suggest that: access to financial aid; referrals to part-time jobs; placement services for jobs and work experience in new career fields; as well as affordable housing are also concerns of some entering adult graduate students at this particular institution. Several respondents asked for orientations to library resources; expanded hours for libraries and computer services; a graduate student services coordinator; and a foreign student advisor.

Other studies (Flannery, Kraskouskas, Krejci, Sandler, Weidman) have demonstrated the importance of support services in promoting persistence among entering graduate-level adult learners. The findings of this current study have further clarified the kind of support-emotional support, and services that entering graduate students would find helpful.

Much remains to be done at the national level in improving the university environment for graduate adult learners. In a recently published report entitled Post-Graduate Education in the 1980's, by the Organization for Economic Cooperation and Development (1987), the authors point out that internationally, there is an "ageing of the general student population, brought about in part by policies for the admission of mature students, and partly by stretching out of studies" (p. 75). Part-time study is not the whole explanation for this trend. The authors conclude that there are two different sets of factors at work: the first include preparation, socio-economic circumstances and motivation; the second set of factors involve higher education itself:

> On the other hand,it is clear that a large measure of responsibility for non-completion must be placed at the door of the academic institution. Here, significant elements seem to be the general quality of the environment..there has been a failure of the flexibility of the system. A more differentiated set of provisions is required.... Structures of provisions (whether at the doctoral or master's level) have not diversified to the extent to which interests (themselves in part shaped by changing employment prospects have diversified) (p. 76).

This study clearly indicated that, even before classes start, factors such as: adults' perceptions of emotional support and their initial reactions to the transition itself of entering graduate studies are significantly related to persistence during the first year. These are interesting as well as important findings in that perceptions of emotional support are related to persistence for adult learners-even at the graduate level. More attention to the perceptions of adults on campus will also mean more quality attention to all learners. If the importance of emotional support to persistence in higher education is accepted and acted upon by the university community; this realization will contribute to the humanization of the education process and the revitalization of higher education at all levels.

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An Analysis of the Student Persistence and Attrition Process: An Urban College Perspective

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Introduction

Urban, commuter institutions tend to have a more transient student population than traditional residential colleges (Upcraft, 1985). It is important to develop a student profile which assists the university in identifying students who are most likely to persist or withdraw. To understand more clearly the student persistence process this study uses a multivariate regression approach to illustrate the relationship between six independent variables and their subsequent effect on student persistence.

There have been many studies conducted in the area of student persistence and attrition. This student flow process has been analyzed in terms of students' backgrounds, their academic abilities and their future aspirations. Each of these factors have been cited as potential causes of student attrition. It is imperative then, that an institution investigate the relationship between these variables and student persistence before developing a strategy for combatting this problem. It is the intent of this study to analyze the variables, gender, race, enrolled program, prior academic achievement and current academic integration as they impact upon on the student persistence process.

Voorhees (1987), incorporating a logit analysis approach to understanding student persistence, finds that gender is significantly related to persistence in a community college setting. He cites that female students are more likely to persist than male students. Conversely, Moline (1987), in his study of financial aid and persistence concludes that gender does not significantly add to the understanding of the student persistence process. From a different bent, Ott (1988), in her study of factors predicting academic dismissal, shows that gender does not significantly contribute to the understanding of why particular students are academically dismissed.

Peng and Fetters (1978), reveal that black college students are more likely to drop out of school than white college students. However, Donovan (1984), finds that low-income black youths persistence patterns are similar to those of college students in general. This finding supports Pascarella and Terenzini's (1980) study which finds no relationship between ethnicity and persistence. Similarly, Voorhees (1987) finds no direct relationship between minority status and persistence.

Bers (1988), reveals that a student's choice of major may effect his/her persistence pattern. Yet, Moline (1987), concludes that a student's major does not contribute significantly to the understanding of the student persistence process. Ott, in her study on academic dismissals, finds that program choice is a significant factor in predicting first semester academic performance.

Academic indicators are often used to help discern between persisters and non-persisters. Ott's study finds mixed results regarding the ability of SAT Verbal scores to predict academic dismissal. However, SAT Math scores were found not to be significant in helping to predict academic dismissal. Jensen (1984), in his study on financial aid and degree attainment does not find a significant relationship between cumulative GPA and degree attainment when

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controlling for recipient status. Donovan (1984), finds that the direct effect of college grades is the most robust factor in explaining persistence among low-income black youths.

Methodology:

This study was conducted at a private commuter school located in an urban environment. This institution enrolls approximately 5,500 students of which 2,900 are undergraduates. A multivariate research design was adopted to measure the effect six independent variables have on student persistence. Data for this study were obtained from the institution's computerize student files. All new freshmen who entered this institution during the Fall semesters of 1983 - 1986 are included in this analysis. The average enrollment size of each entering cohort is approximately 425 students. Only students registered after the fourth week of their first semester are included in this analysis. Persistence status is determined based on these students' enrollment status after their fourth semester.

As mentioned previously, persistence, gender, race and program are classified as dichotomous variables where the values take on the following attributes:

Persistence: Persister=1 and Non-Persister=0;
Gender : Female=1 and Male=0
Race : White=1 and Non-White=0
Program : Liberal Arts=1 and School of Management=0.

Three academic attainment variables are also used (SAT Mathematics score, SAT Verbal score and Cumulative GPA). A student's SAT score is an indicator of his/her academic performance prior to entering this institution. Similarly, a student's cumulative GPA is indicative of the degree of academic integration at this institution.

A stepwise multiple regression analysis is performed to measure the effect of six independent variables as they relate to student persistence. Three variables are considered characteristic or indicator variables (gender, race and program) while three are entered into the model as continuous variables (SAT Math, SAT Verbal and Cumulative GPA). This model tests each independent variable separately as to its effect on student persistence and tests the hierarchical relationship which exists between these independent variables.

Data Analysis

Table 1 displays the results from a chi-square test which shows that female students persist at a significantly higher rate than do male students. Similarly, students enrolled in the School of Management persist at a significantly higher rate than do students enrolled in the College of Liberal Arts. There is no statistical difference between white and non-white students persistence rates.

Table 1: Chi-Square Tests for Categorical Characteristics and Persistence

Characteristic	N	Non-Persisters	Persisters	Chi-Square
Gender				
Male	1,017	351	666	10.792*
Female	1,036	288	748	
Race				
White	1,654	511	1,143	1.655
Non-White	159	57	102	
Program				
Liberal Arts	1,051	377	674	22.620*
Management	1,002	262	740	

* Chi-square significant, $p<.001$.

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Table 2 displays the mean score comparisons of three academic factors and persistence. Persisting students do not differ significantly from their non-persisting cohorts in regard to the SAT scores. However, persisting students have a much higher cumulative GPA (2.59) than their non-persisting counterparts (1.74).

Table 2: Mean Score Comparison, Three Characteristics and Persistence

Characteristic	N	Mean Score	Df	t-score
SAT Mathematics				
Persisters	1,297	445	937	-0.8960
Non-Persisters	528	441		
SAT Verbal				
Persisters	1,298	423	1,824+	-0.5247
Non-Persisters	528	421		
Cumulative GPA				
Persisters	1,414	2.59	2,051+	-23.4350*
Non-Persisters	639	1.74		

Degrees of freedom based on equal variance.
* t-test significant, p.<.0001.

Table 3: Correlation Coefficients, Means and Standard Deviations for Six Variables Related to Persistence

Variable	(P)	(G)	(R)	(PR)	(M)	(V)	Mean	S.D.
Persist (P)	1.000						0.69+	
Gender (G)	0.073**	1.000					0.50+	
Race (R)	0.030	-0.046*	1.000				0.91+	
Program (PR)	-0.105**	0.078**	-0.014	1.000			0.52+	
SATM (M)	0.021	-0.117**	0.157**	-0.014	1.000		443.72	84.871
SATV (V)	0.012	0.014	0.223**	0.211**	0.487**	1.000	422.90	82.246
GPA (GP)	0.460**	0.189**	0.090**	0.052*	0.228**	0.251**	2.30	0.870

+ Reflect proportions rather than mean scores.
* Pearson correlation coefficient significant at p<.05.
** Pearson correlation coefficient significant at p<.0001

Table 3, on the previous page, presents the correlation coefficients among the seven variables involved in this analysis. Six variables differ significantly from zero in regard to GPA while three variables differ significantly from zero in regard to persistence. Although not displayed, a calculation of the coefficient of variation statistic shows that there is substantially less variation around the mean in regard to SAT Math and Verbal (v=.191 and .195, respectively) than Program or Race (v=.962 and 1.00, respectively).

Table 4: Student Persistence as a Function of Six Independent Variables and Their Interaction Terms

Independent Variable	Regression Coefficient	Standard Error	F-test(prob)
SAT Mathematics	-0.00024	.00013	3.57 (.0592)
SAT Verbal	0.00094	.00041	5.19 (.0029)
Cumulative GPA	0.28128	.00192	556.19 (.0001)
Race	0.42469	.15789	7.23 (.0072)
Race * SAT Verbal	-0.00135	.00043	9.93 (.0017)
Program * SAT Mathematics	-0.00068	.00018	15.03 (.0001)
Race * Program * SAT Math	0.00041	.00018	5.18 (.0230)
Intercept	-0.26135		
R-Squared=27.5%*			

* Significant for p.<.0001.

Table 4 shows the results of six independent variables and their interaction terms regressed on the persistence variable. As SAT Math and SAT Verbal scores are required at this institution, these two variables are forced into the regression equation while the remaining four variables, are entered into the equation in a stepwise fashion. The independent variables and their interaction terms are entered the regression equation if they meet the alpha criterion of <=.10 . Two variables (gender, program) fail to meet the .10 alpha criterion and are not entered into the equation. Cumulative GPA is significant and enters into the equation. Cumulative GPA is, by far, the most robust indicator of student persistence and accounts for nearly 90 percent of the explained variance in persistence. Three interaction terms also enter the

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equation. Two first-order interaction terms (Program * SAT Mathematics and (Race * SAT Verbal) and one second-order interaction term (Race * Program * SAT Math) are significant and enter into the equation. Overall, this model explains over 27 percent of the variance in the dependent variable persistence.

Table 5: Multivariate Analysis of Variance for Cumulative GPA and Persistence

Source of Variation	Sum of Squares & Cross Products		Multivariate	Univariate	
	Persistence	GPA	Wilks' Lambda F(Prob)	F(prob.) Persistence	GPA
Gender (G)	1.255 6.769	6.769 36.519	.959(.001)	6.36(.012)	59.55(.001)
Race (R)	0.440 1.667	1.667 6.322	.993(.006)	2.23(.136)	10.31(.001)
Program (P)	6.764 -2.553	-2.553 0.964	.963(.001)	34.31(.001)	1.57(.211)
SAT Math (M)	0.235 4.138	4.138 73.032	.911(.001)	1.19(.275)	119.08(.006)
SAT Verbal (V)	18.229 21.620	21.620 62.862	.890(.001)	1.85(.001)	2.05(.001)
(R) * (V)	4.734 5.929	5.929 24.386	.959(.480)	0.77(.808)	1.28(.138)
(P) * (M)	11.230 7.540	7.540 24.360	.936(.502)	1.14(.237)	0.79(.848)
(R)*(P)*(M)	5.269 5.244	5.244 25.048	.954(.050)	1.03(.425)	1.57(.034)
Error* (Within)	289.842 251.525	251.525 289.842			

* Due to deletion of cases with missing values only 1,632 cases are used.

Tables 3 and 4 clearly indicate that college performance, as measured by Cumulative GPA, is the most robust predictor of persistence. The strong relationship between GPA and persistence, as evidenced above, suggests that GPA and persistence share a common dimension, academic performance. Given this conclusion, a multivariate analysis was performed where persistence and Cumulative GPA are treated as dependent variables. All main effect variables and those first and second-order interaction terms found significant in Table 4 are included in this analysis. Table 5, on the previous page, details the results of this analysis.

Table 5 reveals a significant multivariate F score for the Race * Program * SAT Math interaction. However, this interaction effect us best explained by its relationship with the Cumulative GPA variable. No other significant interaction effects are noted. Significant simple effects are noted for five variables. Significant multivariate F scores regarding Gender and SAT Verbal, are accounted for by both dependent variables. Cumulative GPA best explains the interaction between the model and SAT Math and Race. Lastly, a significant multivariate F score, in regard to a student's program of choice, is best explained by its relationship to the persistence status variable.

Results/Implications

This study shows that student performance, while attending the institution, best explains why a student decides to persist or withdraw. Female students differ significantly from male students in regards to both both persistence and cumulative GPA. Female students persist and have a higher cumulative GPA than their male counterparts even when controlling for the other independent variables in the model. Race, as it relates to persistence, can be best understood when it interacts with SAT Verbal scores and when looking at the particular program in which a student enrolls. Non-white students, when controlling for SAT Verbal scores, persist at a lower rate than white students. Similarly, non-white students, enrolled in the School of Management, and controlling for SAT Math scores, persist at a lower rate than their white

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student counterparts. Those students, enrolled in the Liberal Arts program, when controlling for SAT Math scores, persist at a higher rate than those students in the School of Management.

Conclusions

The results of this study suggest that programs should be developed which identifies students who are doing poorly in terms of their academic performance. By developing early intervention techniques, an institution can help students who are in need of academic assistance and improve their overall persistence rate. This study demonstrates the importance of understanding the student persistence process and identifies variables which impact upon this process. Future research needs to focus on variables related to financial aid, family background and social-psychological traits. It is important to know why some students stay at an institution as well as well as why some leave. A strictly quantitative approach to persistence is too narrow in scope. A qualitative analysis, through such means as focus groups, can help administrators understand the subtle nuances which affect how students perceive a particular institution.

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An Analysis of Factors Related to Student Learning Outcomes

Morlock, J., Moran, T., Gonyea, T. and Green, D.

Enhancing student learning and cognitive development is clearly central to the mission of the University (Pascarella, 1984). In order to make improvements in the processes by which universities promote learning, however, there must exist a clearer understanding of those college-related experiences which exert the most salient influence on student learning. The attempt to identify these influences, and to explore their attendant processes and specific variables has been the basis for a large body of research (Bowen, 1977; Feldman and Newcomb, 1969; Lenning et.al., 1974; Pascarella, 1980).

Recent evidence presented by Lacy (1978) and Pascarella (1984) suggests that the organizational, structural characteristics of colleges have little direct influence on educational outcomes. Their influence tends to operate indirectly by shaping the quality and frequency of interaction with major agents of socialization on the campus, particularly faculty and peers, who have an immediate, causal effect on student learning outcomes (Webb, 1982). More generally, a growing body of literature in organizational theory acknowledges the extent to which an organization's culture and climate, and the interpersonal communications which they prefigure, can determine important organizational outcomes. This research serves to highlight the connection in a college environment between student peer group interaction and student learning.

A factor which has often been overlooked by researchers estimating the impact of the col ege experience on students is the quality of effort that the individual student puts forth (Pace, 1984). Quality of student effort is an intuitively obvious construct in determining learning outcomes. It leads to the hypothesis that some college environments are more effective than others in engendering student involvement and effort; and that the involvement and effort of students in the pursuit of their own education have a highly significant effect on learning outcomes (Astin, 1985; Pace, 1984).

The evidence cited above suggests that variables related to student/faculty relationships, student peer interactions, and the quality and amount of student effort are likely to have a significant impact on student learning. This study attempted to identify, empirically, factors related to these broad categories or constructs. Furthermore, the study analyzed the relative importance of these factors in influencing student learning. This paper details the analyses undertaken in this study, presents the results, and discusses their implications.

METHOD

INSTRUMENT

Data for the analyses were obtained from an instrument entitled the "Academic Development Survey" which was designed and administered at the institution where the study was conducted, a four-year public university. Items which were hypothesized to be related to academic success, as measured by college cumulative grade point average, were selected from the survey for inclusion in factor and regression analyses. These items included student self-perceptions on a variety of personal traits; questions designed to measure the quantity and quality of student effort and goal commitment for academic achievement; and questions about the nature, frequency of and satisfaction with interactions with faculty and peers. Most of the questions required 5 point Likert scale responses, with the exception of hours spent studying, average missed classes, and expectations to graduate from this college.

While the cumulative grade point average admittedly is an imperfect outcome measure, it was felt that it was the best measure we have that is tied to faculty evaluations of student learning. To avoid attrition problems, the cumulative grade point average (GPA) at the time of the survey was used. This study is, then, cross-sectional rather than longitudinal in nature. All class levels were represented, and students had varying durations of experience with the college environment.

SAMPLE

Surveys were mailed to every matriculated undergraduate student enrolled in good status in the Spring 1987 semester (N = 4932). Only 4699 were mailable. No follow-up mailing was done. Completed questionnaires were returned by 1515 students, for a response rate of 32.2%. This survey data was then matched to a student data base file to capture personal characteristics such as high school average, SAT scores, dorm residency, class level, sex, major, original admit type (native freshman or transfer), and cumulative grade point average at time of the survey. Due to missing or incorrect social security numbers, 152 records did not match and were excluded from the analyses.

A Chi Square goodness-of-fit test was done on the sample with respect to the above-mentioned demographic variables. As is usual in survey research on this campus, the sample was not representative with regard to sex. Females returned surveys in greater proportions than occurred in the undergraduate student population, see Table 1. There were also more dorm residents, because the help of the Resident Assistants was enlisted to increase returns of the surveys. This also resulted in fewer transfer students and more native Freshmen. The sample was representative with regard to class level and major. Results of t tests showed the sample to be representative with regard to math aptitude scores; however, mean high school average, college GPA, SAT verbal, and ACT English scores were slightly but significantly higher for the sample. The large N in the study was responsible for very small substantive differences reaching statistical significance, and, therefore, did not cause too much concern about the conclusions which could be drawn from the research. Presumably these higher scores were influenced by the large proportion of females in the sample. Results were weighted to compensate for the over-representation of females, but analyses using the weighted sample did not produce noticeably different results. The latter suggests the relationships between the independent variables and GPA are safe to interpret, especially for this type of exploratory research.

RESULTS

Data analysis began with a Principal Factor analysis, with iteration, of the 44 variables assumed to comprise the hypothesized factors. The number of subjects entered into this analysis was 1310 due to deletion of missing cases. A varimax rotation was done. An 11-factor solution was found, with eigenvalues ranging from .39 to 7.34. The first 6 factors had eigenvalues greater than 1.0 and explained 85% of the variance in the correlation matrix. The eleventh factor was uninterpretable.

Table 2 displays the results of the factor analysis. The hypothetical factors were confirmed, although they split into finer components than predicted. Specifically, items designed to measure student/faculty interactions yielded three factors. The weakest of these was an academic advisement factor which may not necessarily reflect interactions with faculty because peers and staff also advise students. This factor explained 2.8% of the variance. The other two faculty factors are similar to those discovered by Endo and Harpel (1982). That is, one reflects student satisfaction with the helpfulness and accessibility of faculty in interactions outside of the classroom (named "helpful faculty attitude"), which explained 35.5% of the variance, while the second reflects student perceptions of how intellectually stimulating, enthusiastic, and encouraging their instructors are (named "faculty enthusiasm and encouragement", explaining 5.2% of the variance. This latter factor deals more with the teaching behavior of faculty.

TABLE 1

REPRESENTATIVENESS OF ACADEMIC DEVELOPMENT SURVEY 1987*

STUDENT DATA BASE INFORMATION	ADS 1987 SAMPLE N	%	SPRING 1987 ALL MATRIC UG N	%	CHISQUARE
SEX**					
MALE	466	34.2	209[illegible]	42.5	
FEMALE	897	65.8	283[illegible]	57.5	30.55
UNKNOWN***	152				DF=1
TOTAL	1515	100	4932	100	P<.001
CLASS LEVEL					
LOWER DIVISION	602	44.2	2085	42.2	1.56
UPPER DIVISION	761	55.8	2847	57.8	DF=1
UNKNOWN	152	---	---	---	NS
TOTAL	1515	100	4932	100	
DORM RESIDENCE**					
ON-CAMPUS	756	55.5	2511	50.9	8.87
OFF-CAMPUS	607	44.5	2421	49.1	DF=1
UNKNOWN	152				P<.01
MAJORS BY FACULTY					
BUSINESSS & ECON	336	24.7	1276	25.9	
ARTS & SCIENCES	482	35.4	1781	36.1	
PROFESSIONAL STUD	396	29	1282	26	6.78
INDIVIDUAL STUD	34	2.5	113	2.3	DF=4
NO MAJOR	112	8.2	471	9.5	NS
OTHER	3	0.2	9	0.2	
UNKNOWN	152	---	---	---	
ORIGINAL ADMIT**					
NATIVE FRESHMAN	888	67.6	2951	62.5	
TRANSFER	366	27.9	1528	32.4	11.81
READMIT	56	4.3	233	4.9	DF=2
VISITOR	3	0.2	9	0.2	P<.01
UNKNOWN	202	---	211	---	
ENTRANCE AND OTHER SCORES	MEAN	N	MEAN	N	
SAT-VERBAL	450	852	444	2837	**
SAT-MATH	497	852	495	2837	
ACT-ENGLISH	20.43	270	19.7	824	**
ACT-MATH	20.91	152	20.8	480	
ACT-NATURAL SCI	20.37	152	20.2	476	
ACT-SOCIAL SCI	23.66	152	23.5	476	
ACT-COMPOSITE	21.81	291	21.4	911	
HIGH SCHOOL AVG	84.56	913	83.8	3039	**
CUMULATIVE GPA AT PSUC	2.69	1321	2.61	4694	**
GPA IN MAJOR	2.88	1417	---	---	

*1515 COMPLETED QUESTIONNAIRES WERE RETURNED OUT OF 4699 MAILABLE SURVEYS FOR A 32.2% RESPONSE RATE.

**SIGNIFICANTLY DIFFERENT AT p<.05.

**THERE WERE 152 STUDENTS WHOSE SOCIAL SECURITY NUMBER WAS BLANK OR INCORRECT; THEREFORE, THEY HAVE NO STUDENT DATA BASE INFORMATION.

TABLE 2. FACTOR ANALYSIS RESULTS- ACADEMIC DEVELOPMENT SURVEY

(N=1310 FOR 48 VARIABLES)

FACTOR NAME/VARIABLES	% VARIANCE EXPLAINED	EIGENVALUE	MEAN
#1 HELPFUL FACULTY ATTITUDE	35.9%	7.34	
	LOADING*		
HELPFULNESS OF INSTRUCTORS	.765		3.87
ATTITUDE OF FACULTY TOWARDS STUDENTS	.741		3.68
OUT-OF-CLASS AVAILABILITY OF FACULTY	.651		3.73
FACULTY WILLING TO DISCUSS ISSUES OUT-OF-CLASS	.501		3.54
QUALITY OF EDUCATION	.451		3.98
INSTRUCTORS' ENTHUSIASM FOR TEACHING	.435		3.58
#2 INTELLECTUAL DISCUSSIONS WITH PEERS	19.0%	3.93	
HOW OFTEN HAVE YOU DISCUSSED WITH OTHER STUDENTS:			
SOCIAL PROBLEMS	.819		2.76
POLITICAL AND CURRENT AFFAIRS	.728		2.92
IDEAS OF OTHERS	.616		2.35
ENVIRONMENTAL ISSUES	.581		3.11
PERSONAL AND RELIGIOUS BELIEFS	.475		2.70
THE ARTS	.461		2.57
#3 PEER CLIMATE FOR ACADEMIC ACHIEVEMENT	10.4%	2.15	
EMPHASIS ON ACADEMIC DEVELOPMENT	.802		3.26
INTELLECTUAL STIMULATION BY PEERS	.561		3.16
EMPHASIS ON VOCATIONAL DEVELOPMENT	.489		3.20
CHALLENGE TO INTELLECTUAL ABILITY	.474		3.87
PEER SUPPORT FOR ACADEMIC WORK	.443		3.33
ACADEMIC COMPETITION AMONG STUDENTS	.419		3.08
#4 MEETINGS WITH FACULTY	8.0%	1.65	
HOW OFTEN DID YOU:			
MAKE APPOINTMENTS WITH FACULTY	.762		2.66
HAVE FORMAL MEETINGS WITH INSTRUCTOR OUTSIDE OF CLASS	.693		2.93
DISCUSS CAREER ASPIRATIONS WITH FACULTY MEMBER	.615		2.71
#5 ENGAGEMENT IN THE ARTS	6.3%	1.31	
HOW OFTEN HAVE YOU:			
ATTENDED CONCERTS (OTHER THAN ROCK)	.748		2.37
ATTENDED A PLAY	.748		2.41
VISITED AN ART EXHIBIT	.666		2.42
DISCUSSED THE ARTS WITH OTHER STUDENTS	.496		2.57
#6 FACULTY ENTHUSIASM AND ENCOURAGEMENT	5.2%	1.08	
FACULTY (INSTRUCTORS):			
ARE INTELLECTUALLY STIMULATING	.679		3.52
ARE ENTHUSIASTIC ABOUT TEACHING	.596		3.58
ENCOURAGE YOU TO THINK FOR YOURSELF	.562		3.81
ENCOURAGE YOU TO DO YOUR BEST WORK	.497		3.61
#7 INTELLECTUAL & ACADEMIC PEER INTERACTIONS	4.5%	0.92	
HOW OFTEN HAVE YOU:			
HAD INTELLECTUAL CONVERSATIONS LATE AT NIGHT	.751		2.86
HAD INTELLECTUAL CONVERSATIONS DURING A MEAL	.695		3.27
STUDIED WITH OTHER STUDENTS	.406		3.55
ASKED ANOTHER STUDENT FOR A CRITIQUE	.402		3.03
#8 ACADEMIC GOAL ORIENTATION	3.8%	0.78	
IMPORTANCE OF GOAL TO:			
DO WELL ACADEMICALLY	.648		3.86
INCREASE DESIRE TO CONTINUE LEARNING	.498		4.33
MEET REQUIREMENTS FOR GRADUATE SCHOOL	.476		4.06
#9 SATISFACTION WITH ADVISORS	2.8%	0.58	
SATISFACTION WITH:			
AVAILABILITY OF ADVISORS	.777		3.94
INFORMATION PROVIDED BY ADVISORS	.743		3.86
#10 PEER SUPPORT FOR ACADEMIC ACHIEVEMENT	2.5%	0.52	
OTHER STUDENTS ENCOURAGE ME TO ACHIEVE ACADEMICALLY	.666		3.27
STUDENTS ARE SUPPORTIVE OF ACADEMIC WORK	.564		3.33

*ONLY LOADINGS ≥ .40 WERE LISTED AND INTERPRETED

Peer interactions split into four factors: the strongest of these concerned discussions among students about intellectual topics; the second described the peer climate for academic achievement, i.e., how stimulating and competitive students felt their peers were; the third described intellectual conversations with peers and shared studying; and, the fourth was a weak factor which was named "peer support and encouragement". All of the peer factors involved relationships with peers in an academic context, because this was the intent of the survey; and academic factors, such as Tinto's academic integration construct, have been shown to have the strongest relationship to academic success, in terms of persistence and self-reported academic progress (Pascarella and Terenzini, 1980; Terenzini and Wright, 1985). There was some overlap in the items comprising the factors, especially at smaller loadings. This was also true for the two faculty factors.

Two student effort factors emerged. Both also involved interactions with the college environment, i.e., with events and faculty. These were named "engagement in the arts" and "meetings with faculty". The former involved attendance at fine arts events, and the latter reflected appointments with faculty for career counseling and independent projects, i.e., formal faculty interactions. Both factors provided a measure of the initiative and proactivity of the student as well as an indirect measure of environmental impact. Two other measures of student effort (hours spent studying and average number of missed classes) did not load significantly on any of the factors; however, there were marginal loadings of these variables on the meetings with faculty and academic goal factors. The academic goal factor consisted of motivations to secure a good academic record, usually with further study in mind.

Factor scores were computed and were used as independent variables in a stepwise, ordinary least squares (OLS) multiple regression analysis with college grade point average as the dependent variable (Kerlinger and Pedhazur, 1973). Table 3 presents the results of several of these analyses. The initial analysis used only the college-experience factors, i.e., those related to student/faculty and peer interactions, and student effort. These factors together explained 11% of the variance in GPA. Faculty enthusiasm and encouragement was the largest contributor, followed by peer climate for academic achievement, intellectual conversations with peers, engagement in the arts, helpful faculty attitude, meetings with faculty, and two other peer-interaction factors. All of the peer-interaction factors loaded negatively on the equation.

When high school average, SAT scores, and the academic goal factor were added to the analysis, explained variance (R^2) increased to 38%, while the N decreased to 695 because

TABLE 3. RESULTS OF MULTIPLE REGRESSION ANALYSES -
CUMULATIVE COLLEGE GPA AS DEPENDENT VARIABLE.

ANALYSIS #1 COLLEGE EXPERIENCE FACTORS ONLY N=1149

STEP #	FACTOR	MULTR	RSQ	RSQCH	BETA	CORREL
1	FACULTY ENTHUSIASM AND ENCOURAGEMENT	.190	.035	.036	.190	.190
2	PEER CLIMATE FOR ACADEMIC ACHIEVEMENT	.231	.052	.018	-.133	-.121
3	INTELLECTUAL AND ACADEMIC PEER INTERACTIONS	.265	.068	.016	-.128	-.138
4	ENGAGEMENT IN THE ARTS	.292	.082	.016	.125	.130
5	HELPFUL FACULTY ATTITUDE	.318	.097	.015	.126	.144
6	MEETINGS WITH FACULTY	.329	.104	.008	.087	.095
7	ACADEMIC PEER SUPPORT	.339	.109	.007	-.081	-.103
8	PEER INTELLECTUAL DISCUSSION	.347	.114	.005	-.073	-.077

ANALYSIS #2 FACTORS + GOALS + HIGH SCHOOL AVERAGE + SATS N=695

STEP #	FACTOR	MULTR	RSQ	RSQCH	BETA	CORREL
1	HIGH SCHOOL AVERAGE	.498	.247	.248	.498	.498
2	SAT-VERBAL	.530	.279	.033	.196	.356
3	MEETINGS WITH FACULTY	.550	.300	.021	.147	.200
4	ENGAGEMENT IN THE ARTS	.566	.316	.018	.134	.158
5	ACADEMIC GOALS	.580	.332	.016	.130	.163
6	SAT-MATH	.593	.346	.015	.140	.325
7	FACULTY ENTHUSIASM AND ENCOURAGEMENT	.603	.357	.012	.112	.156
8	INTELLECTUAL AND ACADEMIC PEER INTERACTIONS	.610	.365	.009	-.096	-.118
9	HELPFUL FACULTY ATTITUDE	.617	.373	.008	.092	.141
10	PEER CLIMATE FOR ACADEMIC ACHIEVEMENT	.621	.376	.005	-.070	-.123

ANALYSIS #3 ENVIRONMENT, GOALS, SCORES, AND SELECTED* PERSONAL TRAITS N=628

STEP #	FACTOR	MULTR	RSQ	RSQCH	BETA	CORREL
1	ACADEMIC ABILITY	.585	.341	.342	.585	.585
2	HIGH SCHOOL AVERAGE	.656	.428	.087	.323	.506
3	ENGAGEMENT IN THE ARTS	.665	.439	.012	.111	.165
4	INTELLECTUAL AND ACADEMIC PEER INTERACTIONS	.672	.448	.010	-.100	-.142
5	MEETINGS WITH FACULTY	.679	.456	.009	.096	.205
6	READING ABILITY	.682	.461	.005	-.076	.135
7	SAT-VERBAL	.688	.467	.007	.102	.350
8	DRIVE TO SUCCEED	.692	.473	.007	.089	.247
9	ACADEMIC GOALS	.695	.476	.004	.068	.153
10	FACULTY ENTHUSIASM AND ENCOURAGEMENT	.698	.479	.004	.065	.149

*TRAITS WERE SELECTED THAT WERE HYPOTHESIZED TO BE RELATED TO ACADEMIC SUCCESS (GPA).

ALTERNATE ANALYSIS #1 ORIGINAL ADMIT= NATIVE FRESHMEN ONLY N=777

STEP #	FACTOR	MULTR	RSQ	RSQCH	BETA	CORREL
	COLLEGE ENVIRONMENTAL FACTORS ONLY (9 FACTORS)					
1	MEETINGS WITH FACULTY	.193	.036	.037	.193	.193
2	FACULTY ENTHUSIASM AND ENCOURAGEMENT	.251	.060	.025	.160	.109
3	CLIMATE FOR ACADEMIC ACHIEVEMENT	.294	.083	.024	-.155	-.155
4	ENGAGEMENT IN THE ARTS	.322	.099	.017	.131	.154
5	HELPFUL FACULTY ATTITUDE	.343	.112	.014	.117	.142
6	INTELLECTUAL AND ACADEMIC PEER INTERACTIONS	.362	.124	.014	.118	.111
7	ACADEMIC PEER SUPPORT	.374	.132	.009	-.094	-.122

entrance scores are available only for native freshmen. High school average and SAT-verbal scores made the greatest contribution to the prediction of GPA ($R^2 = .28$), followed by meetings with faculty, engagement in the arts, the academic goal factor, and SAT-math. With the addition of these more powerful variables, the contribution of the two faculty factors fell from 5% to 2%. Peer interaction factors were also of lesser importance in this equation.

The final analysis added two other measures of student effort; namely, study hours and average missed classes, as well as self-ratings on selected personal traits. This increased the prediction of GPA; 48% of the variance was now explained. College experience factors now accounted for a total of only 4% of the variance; only one of the faculty factors remained,i.e., faculty enthusiasm, along with meetings with faculty and engagement in the arts and a negative contribution of intellectual conversations with peers. The relationship of hours studied and missed classes to GPA was not of importance in the multiple regression equation, although the zero order Pearson correlation for hours studied with GPA was significant ($r = .115$).

Of the personal traits, student self-perceptions of their academic ability and drive to succeed were positively related to GPA, while reading ability made a small negative contribution to the equation. Student self- perceptions of their academic ability and grades in high school had the relatively strongest relationship to college GPA. (It must be kept in mind that the relationship between self-reported academic ability and GPA could be recursive, because the assessment of these self-perceptions occurred after students had enrolled at the college; therefore, their ratings may have been influenced by their success in college thus far.) Next in importance were student engagement in the arts and meetings with faculty. Intellectual peer interactions made a negative contribution ,while SAT verbal scores, drive to succeed, academic goals and faculty enthusiasm and encouragement made lesser positive contributions, to the regression equation.

Sex was entered as a dummy-coded variable in the analyses but was not selected as an important contributor to the equation. Also, weighting the sample to compensate for sex disproportions did not change the results of the analyses. However, GPA was more predictable for females when analyses were done separately for the sexes. This could be explained by the stronger relationship between high school performance and college GPA for females than males. Faculty relationships had more of an impact on grades for females than males as well.

An alternate multiple regression analysis was done using only the college experience factors for native freshmen, for comparability to the second and third analyses which included entrance scores available only for native freshmen. Results were very similar to the first analysis, with slightly different beta weights; meetings with faculty switched places with faculty enthusiasm.

DISCUSSION

When we examined the relationship between academic success, GPA, and those factors related to the college experience, such as student/faculty interaction, peer group interaction, and student effort, we found a pattern in which student/faculty interaction dominates, as would be predicted from the prior work of several authors (Pascarella, 1980; Volkwein et. al., 1987; Terenzini and Wright, 1985, etc.). This is true for the complete sample as well as with native freshmen only, see Table 3.

In all of the analyses, faculty enthusiasm for teaching made a greater relative contribution to the explanation of the variation in GPA than the helpfulness and accessibility of faculty outside of the classroom. In addition, for native freshmen and analyses which included background traits, formal meetings with faculty was the most important faculty interaction factor (it is also considered a student effort factor here). These findings are consistent with those of Endo and Harpel (1982), who found only the frequency of formal interactions with faculty to be correlated with final GPA. (They found more impact of informal faculty interactions on other outcomes measures, however, particularly on progress toward intellectual growth.) In addition, Endo and Harpel found that helpfulness of faculty did not correlate with GPA. But faculty helpfulness did correlate highly with the student's satisfaction with their education. In our study, helpfulness of faculty was also less related to grades than were the more formal faculty interactions. Furthermore, we found satisfaction with the quality of students' education to load on the "helpful faculty attitude" factor.

Evidence was also found for the effect of student effort on academic achievement as seen through meetings with faculty, and indirectly through engagement in the arts, which may reflect that this latter factor is a proxy for intellectualism. Two other measures of student effort (hours spent studying and classes missed) did not contribute to the regression equation. However, the simple r between hours studied and GPA was comparable to other research, r = .115, (Schuman et. al. 1985).

Peer group interaction, which was hypothesized to exert a strong positive influence on academic development, actually appears to have the opposite effect in this study. This may occur because the measurement of peer group interaction in this study tapped, in the respondent's mind, a concept of social activity as opposed to academic activity. What we were then observing may have been the tendency of socially active students to be less academically oriented and to receive lower grades as a consequence. A more empirically derived interpretation is that of Schuman et. al. (1985), who found a slight but persistent relationship between good grades and studying alone in contrast to studying with others. Furthermore, our own research (Moran, Morlock and Green, 1985) indicates that students with higher aptitudes, as measured by SAT scores, experience less competition and intellectual stimulation from their peers at this college, and may, therefore, spend less time engaged in discussions with them.

In the second analysis, which incorporated the above factors and added student aspirations, high school average and SAT scores, we found the contribution of student/faculty interaction factors were overshadowed by high school average and aptitude scores. This is not surprising because other studies have concluded that achievements prior to college and aptitudes are the best predictors of grades in college (Willingham, 1986). All of the variables in this analysis accounted for 38% of the variance in GPA, but, as can be seen from Table 3, those factors most influenced by the educational context, such as relationships with faculty, peer interactions and student effort, contributed less to GPA than did the high school achievements and aptitudes. This is consistent with Endo and Harpel's research (1982) where only a slight increase in R2 was found when student/faculty interactions were added to background traits when predicting final GPA in college.

When personal traits were added to the regression equation, two of them emerged as primary predictors of GPA. They were student's self-perceptions of their academic ability and drive to succeed. However, these traits are intercorrelated with pre-college ability measures, such as goals, high school average and SAT scores. They may also be confounded by the student's college experience because they were measured simultaneously with GPA and college experience factors. Future research should adopt a more longitudinal approach, using traits measured at orientation before college enrollment and exclude traits that are highly correlated with other measures. Nevertheless, the primary contribution of student self-perceptions may be an important indicator for faculty and administrators in identifying students who are likely to do well and, therefore, to persist to graduation from the institution.

SUMMARY

The importance of student/faculty interaction as a factor exerting significant influence on positive student outcomes, e.g., good grades or self-reports of academic progress, has been found in numerous other studies (Terenzini and Wright, 1985; Volkwein et.al., 1987; Endo and Harpel, 1982; Terenzini and Pascarella, 1980, etc.) and is supported by the findings in this research. Of course, this is to be expected and makes intuitive sense. That the contribution of these interactions with faculty did not account for a greater proportion of the variance in student grades is disappointing, however. Because these are such central activities which are under the control of educators, it would be more encouraging if their apparent influence on student grades were larger. The variance accounted for by student/faculty interactions and other college experience factors never exceeded 11% in this study, nor has it in many other studies; therefore, it is possible that our models are simply inadequate and that other faculty-initiated activities not yet examined are, indeed, highly influential and, once identified, could be targeted for optimal impact on students. Conversely, there is the explanation that we have not yet identified the proper outcome measure(s). Perhaps achievement tests in academic programs, i.e. comprehensive examinations, would provide the best correlations with more specific faculty interaction variables, although this would necessarily narrow the outcomes field to exclude more general educational goals. Student ratings of progress toward general education goals have been used as outcomes measures in other research (Terenzini and Wright, 1985), and have yielded higher correlations with academic integration and are less related to background traits. The college GPA may be more apt to be overshadowed by the student's previous academic performance. In fact, the student may have acquired "practical wisdom", according to Schuman et. al. (1985), which has helped him/her sort out which is the material in a lecture that should be studied for exams. This ability may mask the effect faculty interactions and student effort, particularly hours spent studying, are having on achieving good grades in college, but may not be a factor when students assess their progress toward educational goals. Schuman et. al.(1985) found class attendance to be the best predictor, among several student effort measures, of student grades. They concluded that" since exams were based largely on lecture material, grades were not as related to hours studied as to classroom interactions with faculty. This supposition is consistent with our research.

Unfortunately, the notion of peer interaction, which was hypothesized to have a strong positive impact on student grades was unsupported. Indeed, student interaction on academic issues was found to have a negative relationship to high grades. It would seem likely that this is an artifact of the design of the survey questions which may have evoked high responses from weak students who rely on fellow students to help them master material they would be unable to understand if working in isolation. Schuman et. al. (1985), as noted earlier, found a "small trend for solitary study to be connected with higher grades". Ethnographic designs, employing intensive interviews, completed by Ayres and Bennett (1983) and Triesman (1985) clearly suggest that high performing students recognize the benefits of supportive and encouraging peers who challenge them to do their best work. Perhaps peer academic support is an issue that is less amenable to traditional survey research and quantitative analysis.

Future research will examine some of the questions raised by this study in more detail in order to shed more light on the factors which influence student learning.

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